

AVIATION WEEK

A McGRAW-HILL PUBLICATION

JUNE 5, 1950



Bob Bridge at Salt Lake City knows!

"It's quite a drop onto our runway off the Wasatch Range back of us," Mr. Bridge tells us, "and the mountains send down a lot of heavy weather. So our high intensity runway lights are extremely important. Our air-lines and pilots like them, and I wouldn't want to run an airport without them!"

ask the men who KNOW L-M high intensity runway lighting!

Airport managers, airline men, and pilots who use and know L-M High Intensity Runway Lighting can tell you from their own experiences, and from situations that they personally have observed, how important it is to have good lighting to delineate the runways in good weather or bad. Ask some of the men who know. Then ask the L-M Field Engineer for details, or write Airport Lighting Division, Line Material Co., East Stroudsburg, Pennsylvania (a McGraw Electric Company division).



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Westinghouse is constantly striving for improvement in jet propulsion . . . to provide only the best for the United States armed forces it is privileged to serve.

JAN 1948 B



How 5 airlines land the big ones

BOEING STRATOCRUISERS now fly the colors of five major airlines—Pan American World Airways, Northwest Airlines, American Overseas Airlines, British Overseas Airways Corporation, and United Air Lines. The main member of Stratocruiser used by these lines is well over 5000 feet. And in every one of them, the main wheel assembly and nose wheel assembly are completely B. F. Goodrich—wheels, brakes, tires, and tubes.

As a result, landing these big fellows is easier, safer, and cheaper. The new

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brake, tire and tube—offer special advantages for military and private planes as well as airships. Standard assemblies are available for quick delivery and a new assembly can be engineered for any aircraft design on your drawing boards. Write *The B. F. Goodrich Co., Aerospace Division, Akron, Ohio.*

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Aviation Week

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Editorial

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REVIEW AND PERSPECTIVE: Dr. James H. Wilson (2000 8th St., Berkeley, Calif.) author of *Principles of Aerodynamics*, published by McGraw-Hill, has written a new book, *The Aerodynamics of Propulsion*, which will be published in October. The book will be of interest to aircraft engineers, particularly those involved in jet aircraft design. It will also be of interest to aircraft manufacturers, particularly those involved in jet aircraft production.

AVIATION WEEK, June 5, 1950

MID-CONTINENT ADDS CONVAIR-300s

One of Mid-Continent's new Convair 300s, shown here, has just come into service throughout the Midwest. These 40 passenger 300s will complement Mid-Continent's Convair 440s and its older aircraft now available.

These planes now do our fast express schedules. With new Pratt & Whitney 1400-hp engines, they are lubricated exclusively with Texaco.



New ships for express schedules are lubricated exclusively with TEXACO

Mid-Continent Airlines has just put into operation its new "Convair 300 Fleet" . . . pressurized and air conditioned transports that provide new speed and comfort for passengers, on express schedules throughout the heart of America from Minnesota to the Gulf.

Mid-Continent Airlines has always measured service and dependability—a fact proved by flying over 500 million passenger miles safely in 15 years. In line with its insistence on quality, Mid-Continent has, from the start, used Texaco Aircraft Engine Oil exclusively.

Other leading airlines share this preference for Texaco. In fact—more revenue airplane miles in the U.S. are flown with Texaco Aircraft Engine Oil than with any other brand!

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135 East 42nd Street, New York 17, N. Y.



TEXACO Lubricants and Fuels
FOR THE AVIATION INDUSTRY

TIME IN . . . TEXACO STAR MEETINGS starting MARCH 10TH Series on television every Tuesday night See newspaper for time and station

Missiles and Planes In the News



WESTLAND WYVERN T.F. 2, single-seat turboprop fighter in new flight test



GRUMMAN AF, claimed to be largest single-engine prop flying, has subsonic cruise



TOP SERGEANT T-33 jet trainer copies has 15 ft. nose turned by engine at top



ITALIAN TRAINER, Ansaldo S.7, is planned to prepare pilots for jet planes.



NKE, solid-powered Army anti-aircraft missile, has low-speed boosters added on tail



TARRIN, Bell Aircraft Corp.'s 12,000-lb. bomb, can be guided during descent by electronic commands from beneficer.

The New



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- * Two Housing Styles: Side mounting model for general purpose applications and side mounting model for Trim-Trot applications. See above.
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- * Weight 3.2 pounds
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AVIATION CALENDAR

June 8—Port & Whitney distributor opens bus and maintenance meeting, Avcolet Corp., Melville, N.Y.

June 10-11—National Aerospace Assn. and convention, Hotel Statler, St. Louis, Mo.

June 10-12—International aero exhibition, Convention Palace, Brussels, Belgium.

June 12-13—Midyear meeting of Aviation Distributors and Manufacturers Assn., La Salle Hotel, Chicago.

June 12-15—Conference on costs, budgeting and economics of industrial research, Department of Industrial Research, Columbia University, New York.

June 13-16—AIAA summer and Fall joint meeting, Huntington Hotel, Falls Church, Calif.

June 15-18—Navy Sheet 1110 conference, Ft. Clark Coast Guard, Rockport, Tex.

June 20-21—1962 annual meeting, American Society for Testing Materials, meets on a day and a half basis with related equipment, Chateau Hildene, Hildene, Vt., Lake George, N.Y.

June 21-July 4—1962 national meeting of Institute of Navigation, San Diego, Calif.

July 7—First Air Force 1962 display, Farnborough airfield, England.

July 10-12—Air Force Materiel Command symposium, Park Air College, E. St. Louis, Ill.

July 13-14—Annual summer meeting of the Institute of Aeronautical Sciences, western headquarters building, Los Angeles.

July 16—Flight efficiency meet and air show, sponsored by Missouri Aviation Club, Inc., Midwest City, Okla.

July 20-21-22—Annual 21st Blue air show, organized by Cleveland Area Chamber of Commerce.

July 20-21—13th-17th National Song Contest, Grand Prairie, Tex.

Aug. 2-3—17th-18th National Song Contest, Grand Prairie, Tex.

Aug. 2-3—National research program on high temperature ceramics, Massachusetts Institute of Technology, Cambridge, Mass.

Aug. 29-Sept. 1—Colloquium, Air Force Office, Space and Civil Applications, Communications and Technical Division, Communications Research Directorate, Bedford, Mass.

Sept. 2-4—National Air Races, Cleveland, Sept. 8-10—Seventh Ring Single, and ex-Soloists, Society of Berlin Aerobatic Competitors, Berlin, West Germany, England.

Sept. 5-7—Ferrari & Whistler's annual open house and maintenance meeting, Ferrar-Air Corp., Linden, N.J.

Sept. 15-17—15th national instrument conference and exhibit, Missouri Assn. of Teachers.

Oct. 16-18—9th annual aviation conference, sponsored by the 19th committee of the Texas Chamber of Commerce.

PICTURE CREDITS

—Courtesy: 1962—McDonnell Douglas Corp.; 1961—Bell Telephone Co.; 1960—Northrop Corp.; 1959—General Dynamics; 1958—Northrop Corp.; 1957—Boeing Co.; 1956—Airbus Corp.; 1955—General Mills; 1954—Boeing Co.; 1953—Boeing Co.; 1952—Boeing Co.

NEWS DIGEST

DOMESTIC

Western Air Lines, last week was to take back the DC-4s it leased to Western Air Lines of Colorado to operate nonstop coach service between Los Angeles and San Francisco and, Rocco W.M.C. had served its purpose, striking out coach service in the name of "Western" until W.A.L. could get permission to operate skyways. Recall the end of WALC?

Decision is near on PAA/ALCA merger. United CAB and the White House complete review by July 10. A further extension of the date agreement will be necessary. By last week, CAB members had scattered to various parts, in the hope of as long as three weeks. Delays were over that meant CAB's work on the case had ended.

Record flights TWA, 77 flights, 32 children under two, 3 more, in a single flight scheduled yesterday from Chicago to New York. North American Aviation, F-86 Sabre, 12 miles, .96 sec. for 311 mph at 30,000 ft. San Francisco and Los Angeles, average speed, 625 mph.

Lockheed F94-A crash at Wright Field was believed due to high altitude fire. Last night Eglin was passed by Altman R-450 with a Solar afterburner. Pilot reportedly was unable to light the engine after the vacuum Ruth resources were killed.

Constitution Skymaster series of TWA had an 89 percent load factor during the first few days of June (which started May 26). Passengers carried last month from Los Angeles had an 81 percent load factor. A DC-8 extra section had to be added to carry a \$1 passenger overflow. Westbound flight carried 75.

Delta Air Lines has asked CAB permission to use 60 passenger DC-8s on its Chicago-Minneapolis coach service, replacing high-lifted DC-6s.

New labor agreement has been signed by Boeing Airplane Co. and Auto Mechanics Union which staged a five-day strike, June 19-23. Wage scales remain unchanged. Some wage was granted other benefits equivalent to about five cents an hour. That is the first contract since the strike.

Special VHF radio checks for use at private places at uncontrolled airports will be conducted by the Radio Technical Commission for Aeronautics

Sessions: Aircraft Owners & Pilots Assn.; Michigan Aviation Authorities; Purpose Exchange of weather information and landing conditions between field and point. Power would be for two weeks, long enough to enable interchange with other stations.

Abraham M. Brotman, development engineer in charge of dual propeller engines at Pratt & Whitney, Inc., Springfield, Mass., died in St. Joseph's Hospital.

Pratt & Whitney Div., United Aircraft Corp., has been awarded Navy contracts involving 231,307,413 for Wind Master R-450 engines, Hercules Stand and the jet 520/50/198 in contracts for propeller assemblies.

INTERNATIONAL

Five engines of 7 percent gain introduced for North Atlantic aircraft on Sept. 30, 1961, by the International Air Transport Assoc., which decided at the latest at a traffic conference in Madrid, Spain, to make one new New York-London fare will be \$375 instead of \$193. There will still be a 16 percent round-trip deduction. Other IATA fare decreases will range from five of one and one third times basic fare, minimum of 25 days, rounding at five-and-one-tenth hours. June 1—Mar., 1962, 10 percent decrease in slower, less-comfortable planes making frequent stops in Madison, Sioux and Middle East areas.

Roussie Air Forces, world's speed record holder Paris-New York, 43 hr., 50 min. flight with Conairline 747A carrying 13 passengers, piloted by Capt. Georges Lebert. Antonov Gora aircraft, carrying Shannon New York, 11 hr., 37 min. and in St. Petersburg piloted by Capt. Edward A. Stewart.

Crash of Columbian Airlines, Linares, plane reportedly killed 28.

Single International Standard for air velocity of atmosphere for transport planes is expected to be adopted as principle by the International Civil Aviation Organization during its current session. Standard would include jets. Target date for adoption is 1962. Standard likely will be close to U.S. requirements.

Vickers-Armstrong is sending a Vultee (Canberra) trainer and stricken (jet fighter) on demonstration tour to India and the Middle East.

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of faster planes

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One Example: Shell's PLANNED UPGRADING of aircraft fuels and lubricants ...

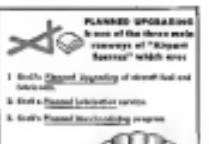
PLANNED UPGRADING of fuels is shown in the new Shell 80/90 aviation fuel. This 80 octane fuel with a guaranteed minimum rich mixture rating of 87-octane was made available by Shell as a nation-wide basis in 1949. It is the fuel which has undergone extensive research for many months in place of 90-octane.

Planned upgrading is also evident in the new Avco-SHELL Lubrefast which meets the most exacting needs of modern aircraft. Such product superiority is the result of feeling ahead, of anticipating needs, of continued research on a long-pull basis.

Notes for an application of regular or 80/90 aviation fuel to aircraft engines.

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WHO'S WHERE

In the Front Office

Hermann E. Lando, Jr., has been made vp of operations for the new division of Avco Corp., with two individuals from Avco Research Inc. Co. president of Ghar Chemical & Manufacturing Co., and vp of Avco Corp. He also has been manager of research research and test director of research and engineering.

Mr. Guy Roger R. Coffey has been named president of Federal Telecommunications Inc., succeeding Harold H. Blitzen, who has been appointed vp and director of sales and marketing for the Telephones and Telegraph Corp. Gen. Counsel at one time was chief of the engineering and technical service of the Signal Corps, and as communications officer at the Air Transport Service Command at Wright Field. Blitzen was associated with International Telephone and Telegraph during 1938.

Changes

With the Metabolins—Albert H. Blaugrund has joined Glenn L. Martin Co.'s public relations staff to handle community relations. Stephen H. Brewster is a new vice president of stockholder services.

Robert T. Wood has been named chief metallurgist of magnesium products for Alcoa Inc. of America. Charles F. Brady, Jr., has joined National Instrument Laboratories Inc. as manager of technical services. George C. Hansen, who formerly held this position, is now working for Radio Corp. of America in the broadcast sales division.

With the Airlines—John H. Rogers has been named manager sales mgr. of Pacific Alaska division of Pan American World Airways. Roger Johnson has been made director traffic manager for Pan Am in Honolulu. H. Vinton Smithson has joined Southern as a travel agency relations expert.

Thomas J. Hayes has been made American Airlines manager of cargo sales to the east airways. L. B. Bishop is Commandant All Lines new manager of passenger services, replacing Everette P. Townsend, to be succeeded as the lines' director traffic and sales manager to that city.

Honors and Elections

Paul W. Kirkpatrick, chairman of the board of Geophysical, The and Research Co., has received the annual award from the Service Test Unit of the American Legion in recognition of his 90 years in aviation. Trans World Airlines President Ralph S. Damon has been elected a member of the board of the Commerce and Industry Area of N. Y.

S. D. Knobell, president of the National Aircraft Standards Committee, has been awarded an honorary certificate by the American Standards Assn. for his work in developing industrial standards. C. E. Shad has been elected a vp of Lear, Inc.

INDUSTRY OBSERVER

Labor experimental version of the multi-purpose British Bristol Freight, is being fitted with a float bypass for aerial distribution of top soil and fertilizer for reclamation purposes on heretofore inaccessible ground land. Bypass is designed for removal from aircraft through nose doors, so the plane can be used as ordinary freight if desired.

Fuel experts predict Lennsen will power conventional, turbine-powered planes rather than special high-speed fuel blends. Solid fuel also should be of particular interest, particularly for commercial air operators. Lennsen has probably cost about \$1 a gallon less than aircraft aviation gasoline. Monotube reaction gasoline planes are expected to go up when heavier aircraft costs cover greater one because of storage and supply problems encountered in handling two different types of fuels.

First flight of the Piasecki XH-16 twin-engined transport helicopter is due Aug. 1952. Funds to complete two of the craft are being allocated in 1951 fiscal year Air Force funds. Monolithic component parts are already being constructed at the Piasecki Marine, Pa., plant, where the model of the big rotor, designed for both transport and assault, has already passed wind-tunnel tests.

Increasing the range of many larger military aircraft by use of wing-tanks or underwing tanks is in the cards. Chase YC-122 assault transport is expected to increase its range to 4,600 mi. with lip tanks. Douglas C-124A, Lockheed PV-2 Neptune, as others with wing-tank versions. Fairchild under-wing tank arrangement for Boeing B-52D is adaptable to B-57s and to C-97 Stratofreighter, as well.

First operation of Allison T-38 turboprop engine is planned for the Convair Turbowing, which General Motors purchased will probably be on an experimental basis, in order to put the plane into the air as soon as possible. But Allison still plans to seek CAA certification of the engine. Schedule now calls for delivery of first T-38 to Convair at San Diego in June and second in July.

First avion transport use of the newly certified Westinghouse J-34 jet engine is expected to be in pod auxiliary powerplants flying under the wings of the Boeing Stratocruiser. Pan American World Airways is reported crash saturated in this means for upping the performance of its Stratocruiser. Boeing engineers anticipate the extra climb performance and increased range will pay off sooner in range, enough to fly the Atlantic both ways nonstop. New York to London, regardless of winds, and maximum fuel consumption.

Boeing Superfort flying boom aerial mining tools have been designated KH-24B and are in quantity production with the first 25 of the heavy-duty models in service. They are designed for inflight refueling of Boeing B-52s. It is expected that the same system will be used later in refueling the Boeing B-47 single bombers.

CCA project to finance purchase of Pratt & Whitney R-4360 engines and other U.S. basic avionics equipment to be used on the Boeing Vertol SE-2000 American four-engine transport, reported last December that the new R-4360-C engine rated at 4,000 hp has not yet been assigned for engine. The French wanted that engine turned out of the engine section that are getting R-4360-B-11 rated at 3,750 hp. In event the latter engine is retained for export sale, the French are expected to ask an additional CAA grant of \$2 million to make up the difference in price, and get the newer engine. (See story on page 13.)

Aeronaut Nacional de Colombia (Avianca) is weighing the purchase of Douglas DC-6 or Lockheed Constellation. It now operates DC-4s.

Starting cost of nuclear-air defense measures is going defense planners past. Recent cost study indicated that to defend one city of Washington's size against an air raid, using the Boeing GAFA rocket missile, would cost about \$40 million to knock down 750 medium aircraft, at \$100 million for a 1000-plane raid.

Convair Builds New Turboprop Transport

Production stopped on Convair-Liner; all-new plane to replace it.

By Alexander McNulty

Top management of Consolidated Vultee Aircraft Corp. had held last week and came up with a new source set of signals for Convair's next play on the multi-engine turboprop game.

What the new transport industry needs is a completely new transport aircraft specifically designed for turboprop engines, and Convair is the company to build it, they decided.

Discussion was announced by LaMotte T. Cole, Convair president, and Floyd B. Ottens, Convair executive vice-president, during a major air show staff Convair sales meeting, up until now, has been centered on the Convair-Liner. The discussions were ranging checkbooks in behalf of new Convair-Liners, with necessary model changes to use the turboprops. Now the Convair-Liner production line is chopped off, one and all. The discussions are focusing on a new "story" for their customer, about the Convair turboprop transport, successor to the Convair-Liner.

Cole said that the new transport was already in the advanced planning stage, "and will be drawn up, designed, and structurally with ample allowance for all anticipated increases into turbo-prop power."

Probably a major factor in the decision was the realization that the Convair-Liner conversion to turboprop power may not be able to suffice the full power promised from the turbines more now being developed.

Altair Turbo Roots—AVIATION WEEK learned last week that the Allison T-56 turboprop is expected to develop at least 10,000 shp at 37,000 ft equivalent shaft rpm at which the turbine is currently rated. Convair's five 2400 hp Pratt & Whitney piston engines, to turboprops with each 2550-shp shaft by 45,000 ft, is not so awful! But boosting the power to a full third more than that supplied by the piston engines is another story.

How far the new transport plan goes in swept wings, and tail surfaces, and



POWERPLANT MATCHED: Nacelle of T-56 turboprop engine for Convair Turboliner is longer than that of Convair-Liner piston engine (left), but twin with 8 lights

fairing streamlining clearly is not yet clear. But the other appeal of these "superior" refinements of design is an important factor for consideration along with the unquestioned importance of economy.

No Interference—The Convair position and that the new program would not interfere with interim plans to convert a Convair-Liner to Allison T-38 turboprop power for the General Motors Corp., nor will it change plans to build turboprop modifications into its old to succeed new using Convair-Liner, in that they can convert them to T-38 power.

It is assumed that the converted Convair-Liners may be phased out at a two-to-one speed with the arrival of the T-56. If so, the new aircraft will be the 19th to be built of the Convair-Liner, close to have last "nearly \$50 million" in the program (AVIATION WEEK, Jan. 25).

The new plane announcement obviously is a closed contract now against the Martin 6-4-4 transport which will start out next spring as a passenger plane, but not as an airplane for the present time, although well over 100 have been built.

Despite widespread publicity of the big-stretched Convair 8-86 as a weapon in the war, few of these are operational at the present time, although well over 100 have been built. Many of the 8-86s have delivered have been sent back for modifications at St. Louis and San Diego. The 8-86s are being converted into 8-87s and the 8-88s are being converted to 8-89s by the addition of four jet engines in pods under the wing tips. None of the jet-pod 8-86s have yet been delivered.

Combat Redesign—But a basic of combat mission, right now, has a bare

nod stuck up, as outlined in AVIATION WEEK by SAC spokesman at Convair AFM, command headquarters.

Stating: An Command plan overall calls for 18 groups of planes. Fourteen are heavy bomber groups and three are strategic reconnaissance groups.

Today SAC has three B-52 bombardment groups, none of which is completely equipped, and a fourth group is due for conversion. The other 11 groups are divided between B-36 and B-52 groups. To bring up the long range capabilities of these 11 groups to range comparable with the B-52, and an increasing in planned, so the group strength of these units is being increased by KB 20, or 10 percent.

► **Jet Conversion**—All three reconnaissance bomber wings are flying World War II B-36s. The 9th BW wing (Fighter-Bomber ABF, Calif.) and the 28th BW wing (Based Conv. S. D.) are scheduled for conversion to KB-36s while the 91st BW wing (Barksdale, La.) will get KB-5Bs as replacements for its B-36s within the next 18 months. One squadron of the 91st wing, however, is undergoing a "bomber" transition training at Langley AFB, Va., with North American B-45Cs bombers. When training ends it returns to Barksdale to use the KB-36s as replacement North American B-45Cs.

SAC later the 91st wing is expected to become an all-jet reconnaissance wing, in the B-52s and the KB-5s are stored by Boeing EB-47s, when the small bombers are ready for delivery. ► **A Year for Strength**—Neither of the KB-36 groups will build its group strength with the big replacement bombers for at least a year. However, the replacements are expected to start coming in about Aug. 1 of this year. And each of the wings has more than one bar of the other model: B-36s, used for training, after which will be returned to KB-36s for conversion.

Two of SAC's B-52 bomber groups are later scheduled for replacement by B-47 groups as soon as production of the jet bombers begins. Eventually the bomber strength of SAC will include four B-52 groups, two EB-47 groups, 5 B-58 groups and four B-59 groups.

SAC plans cell for reconnaissance and bomber type aircraft in each group over 4,760 miles. For reconnaissance bombers of the B-58 type only, the seats will be 11, with B-58s performing only one seat per crew member.

SAC has been forced to spend both heavy bomber and reconnaissance losses than. Recently the T-1 Air Force which concern SAC—the 19th, March, ABF, Calif., 18th, Carroll AFB, Tex., and 1st, Barksdale AFB, La.—each, were given control of a strategic reconnaissance wing. Formerly, all strategic reconnaissance was assigned to the 2nd Air Force.



ARMAGNAC U.S. dollar to finance construction by US builders and operators

French Planes Completed by ECA

Transports for Air France ocean service needed P & W engines; ECA buys them and U. S. lines complain.

By Alexander McNulty

equipment and air conditioning for the planes.

The Armaignac is most closely comparable to the Boeing Stratocruiser using US transports, but is larger and faster. Total cost of the Armaignac transports on order by late April 11.

ECA funds totaling \$4.5 million will buy 34 Pratt & Whitney Way Major & 3450-HR engines rated at 3500 hp each, plus propellers, accessories, and

ECA indicated recently that it did

ECA Aviation Procurement

Breakdown of Economic Cooperation Administration's procurement authorization for aircraft, engines, parts, accessories, instruments and general handling equipment shows the following purchases since April 1, 1948 in round figures:

France	100 CONVAIR 90-1000 AIRLINER	\$37.2 million
Italy	100 CONVAIR 90-1000 AIRLINER	4.5 million
Netherlands	25 CONVAIR 90-1000 AIRLINER	2.5 million
Belgium	10 CONVAIR 90-1000 AIRLINER	2.4 million
Greece	10 CONVAIR 90-1000 AIRLINER	0.9 million
Denmark	10 CONVAIR 90-1000 AIRLINER	0.6 million
Norway	10 CONVAIR 90-1000 AIRLINER	0.3 million
Sweden	10 CONVAIR 90-1000 AIRLINER	0.1 million
Additional , not shown in above totals		\$76.8 million

Total

\$76.8 million

U. S. Aircraft Purchased Through ECA

Another of U.S. transport aircraft purchased in whole or in part with ECA funds since April 1, 1948:

- France: 50 Constellations, 9 med DC-4s and 2 used Constellations
- Italy: 3 DC-4s
- Netherlands: 20 Constellations, 6 DC-6s, 12 Convair Liners
- Belgium: 6 Convair Liners
- Denmark: 2 DC-4s
- Norway: 2 DC-4s

Total aircraft purchased: 13 DC-4s, 10 Constellations, 18 Convair Liners, 9 DC-4s.

not expect to make additional purchases in U.S. aircraft as a result. For foreign commercial transporters, due to the fact that American airlines had registered complaints about the unfair competition for international air travel. Previously approximately 90 U.S. airplanes had been purchased in whole or in part by ECA funds for foreign air transport use, an entry into competition with U.S. international carriers (See accompanying table).

The U.S. airline complaint, which received considerable attention from sympathetic congressional, can be summarized:

"Why should ECA buy airplanes for foreign state-owned carriers to operate an international air service in direct competition with us? Why should American taxpayers' dollars be used like this to finance foreign competition to American airways?"

There are major differences however between the American passenger affiliation and previous Wright purchases of U.S. aircraft for foreign airlines. ECA spokesman said quickly to report.

The Sun East Air Lines plane at Blagnac was unable to find suitable powerplants for its use in transport in its own country so that the Americans are forced out but have been put in service for some time if it had to wait for French engines. This would have meant starting down the Sun East plant with resulting unemployment and adverse effect on the French aviation industry and on military production capacity.

15 Planes—It is estimated the American plan will keep the Sun East plant working until the spring of 1952, when the first 15 planes are to be completed, with another 150 planes kept at work over this period.

In addition to the \$4.5 million just made available, a total of \$7,900,000 has already been spent on the program, of which \$1.5 million was supplied by ECA, and the remainder by the French industry. This includes for powerplants, propellers, etc., for the prototype and the first seven production planes, plus 10 spare engines.

Five production SP-1010 is due for completion in July, and the seventh in Nov. 1951. Then the first airplane which will use engines under the ECA allocation will follow on the schedule, with its completion due in Jan. 1952. Engines purchased under the new allocation, however, are needed to feed into the production line beginning in May 1951.

Analysis of the ECA Armstrong program shows \$1.6 million goes for the 94 engines, with another \$135,000 for propeller assemblies. Curtis C-644 SH-306 propellers, with three blades, will cost \$123,000. The remainder of the sum is apportioned



Turbodyne Completes Test Run

Northrop Aircraft's XT-37 Turbodyne, now fully qualified for preliminary flight tests, after successfully completing an 80-hr endurance-testing program.

The Turbodyne was developed for the Air Force by a Northrop subsidiary, the Turbodyne Corp.

The engine is described as the most powerful single-stage aircraft powerplant in the world, having delivered more than 10,000 hp in tests. During its endurance program it developed 7,900 hp continuously over "two intervals of time," Northrop says. During one phase it was operated at 8,000 hp output, simulating emergency conditions.

No Breaking In—The full 50 hr. endurance program was conducted as a standard engine directly after it was assembled. Within 30 min. of its assembly on the two-stage test stand, the XT-37 was delivering 7,900 hp without any "running-in" according to Northrop.

He said he thought he could repeat the endurance run without interrupting the engine for inspection.

Complete power and tested connected system, reduction gear, propeller and multi-layer automatic electronic control system.

Components—Components were developed under a coordinated program with aerospace manufacturers. Reduction gear, developed by Wintena

Geer Works of Los Angeles, provides 1 to 1 reduction and delivers dual rotation to concentric shafts.

In addition, concentric-speed, dual rotating propellers were developed by Aero products division of General Motors. Single-layer aerospace electronic control system, developed by Eclipse Pro near division of Bendix Aviation Corporation, contains transistors and propeller controls, automatically matching engine characteristics and power to propeller load conditions.

Development-Priming—Turbodyne is a product of nearly 15 years research by the Turbodyne Corp., America's oldest gas turbine research organization. Northrop was first awarded a Navy contract to develop a geared gas turbine in 1941. First successful turboprop engine was built under a joint Navy Air Force contract and designated the Alpha 1. In 1945 when the Turbodyne was selected in a test run.

Northrop continued with its research under an Air Force project and developed the pusher Turbodyne XT-37 when that service decided not to install turboprops in the F4U Corsair. Subsequent development work led to the new XT-37, designed for both pusher and turbine installations.

The Turbodyne is ready for mounting on an airframe, but the Air Force has not yet and whether it will remain in storage for that purpose.

While the French airplane will be probably more closely competitive with the Statesman than any other, the French manufacturer chose to Boeing for engineering advice on its aircraft installations. And engineering for the first fleet installations was handled on a powerpack basis by Rialto Aircraft Corp. of Chela Vista, Calif., and Pratt

& Whitney. The Rialto company makes propulsor, missiles for Breguet B-50 bombers.

Specifications—Comparison of specific statistics between the two planes show greater utilization of space, and load carrying through waste efficient design of the interior in the Boeing plane which carries approximately the same payload with far greater fuel and the same maximum number of passengers, although through the Armstrong fuselage is 20 ft longer.

	Armstrong	Stevens
Length ft	136	116
Span ft	160	141
Cabin ft	170,000	142,500
Payload with full gear		
lb	10,000	10,000
Cruising speed mph	80	80

Note: Armstrong cruising speed shown at 25,000 ft, while Stevens' cruise operating speed is at 15,000 ft.

AVIATION WEEK, June 3, 1950

April Contracts Top \$16 Million

Av. Force this week let bid contracts in excess of \$100,000 awarded during the month of April. Total awards among a total of \$16,648,345 as contracts was for \$12,000,000 to Curtiss-Wright Corporation, Wichita, Kan., for propellers, spacers and controls for B-50 and B-29 aircraft.

Other April contracts follow, with value and date of contract given later than April 30 indicate original letter of award:

Aerospatiale—General Motors Corp., Dayton, A-3121, propeller blades, hub, spinners, etc., for T-38 aircraft. **Alcan**, Cincinnati, Ohio, F-35 aircraft traction powerplants, date, Apr. 14, \$1,200,000.

Bendix—Bendix Corp., Cincinnati, Ohio, aircraft wheels and tires, Apr. 16, \$100,000.

Boeing—Strategic Materiel Division, Seattle, Wash., for maintenance, modification and engineering reports, Mar. 16, \$100,000.

Breitling—Clermont Corp., Buffalo, N.Y., propeller blades for fighter training. Apr. 6, \$335,000.

Consolidated—Consolidated Aircraft Corp., Marietta, Ga., 100 aircraft wings, date, Apr. 14, \$1,200,000.

Curtiss-Wright—Curtiss-Wright Corp., Farmingdale, Long Island, N.Y., aircraft propellers, date, Apr. 14, \$1,200,000.

Douglas—Douglas Aircraft Co., Long Beach, Calif., aircraft propellers, date, Apr. 14, \$1,200,000.

Ford—Ford Motor Co., Milwaukee, Wis., aircraft propellers, date, Apr. 14, \$1,200,000.

Grumman—Grumman Corp., Bethpage, N.Y., aircraft propellers, date, Apr. 14, \$1,200,000.

Hawker—Hawker Siddeley Div., United Aircraft Corp., East Hartford, Conn., redesign of control surfaces, date, Apr. 14, \$100,000.

Hughes—Hughes Tool Co., Tulsa, Okla., aircraft propellers, date, Apr. 28, \$100,000.

Junkers—Junkers Flugzeug und Motorenwerke AG, Dessau, Germany, aircraft propellers, date, Apr. 14, \$1,200,000.

Kennedy—Kennedy Aircraft Laboratory, Buffalo, N.Y., aircraft propellers, date, Apr. 14, \$1,200,000.

Lockheed—Lockheed Corp., Burbank, Calif., aircraft propellers, date, Apr. 14, \$1,200,000.

Martin—Martin Aircraft Co., Seattle, Wash., aircraft propellers, date, Apr. 14, \$1,200,000.

McDonnell—McDonnell Aircraft Corp., St. Louis, Mo., aircraft propellers, date, Apr. 14, \$1,200,000.

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McDonnell—McDonnell Aircraft Corp., St. Louis, Mo., aircraft propellers, date, Apr. 14, \$1,200,000.

Navy—Navy flight clothing Apr. 21, \$220,000, 5100 sets type O-1 shirts, type A-1, jackets, type F-1, Apr. 19, \$177,000.

Perkin-Elmer—Corporation de l'Instrument Corp., New York, magnetic compasses for male, compass AN-ARM-6, Feb. 11, \$111,310.

Quartermaster Corp.—New York, performance

standards, date, Apr. 13, \$115,512.

Radiant—Radiant Appliance Co., Milwaukee, Wis., ranges model type A-135, Apr. 16, \$100,000.

Reed—Reed Switch Corp., Milwaukee, Wis., telephone type N-3-N-L, incandescent light fixture type F-1 and D-1, Apr. 17, \$513,464.

Standard Electric—New York, standard switch parts and contacts, date, Mar. 21, \$12,000.

State—State of Texas, Dallas, open jet racing and endurance races (not propeller racing) Apr. 6, \$335,000.

Stearns—Stearns Corp., Trenton, N.J., park amusements—back line, Apr. 6, \$100,000, park amusements—front line, Apr. 13, \$100,000.

Transocean Corp.—Honolulu, marine power parts for Boeing AN/PQD-13, TIA, Mar. 10, \$195,427.

U.S. Rubber—New York, switch base, date, Apr. 26, \$100,000.

Vestron—Vestron, Inc., Terrell, Texas, aircraft propellers, date, Apr. 14, \$111,412.

Western Electric—New York, telephone, date, Mar. 21, \$111,910.

As France expects to see all 15 of its big airplanes eventually for passenger transportation on North and South Atlantic routes and on other intercontinental routes between France and its colonies.

At present the Turbodyne is the only

French airplane in use.

It is the first to be delivered.



CESSNA 305

Liaison Entries

Piper PA-19, Cessna Model 305 are leading contract contenders.

Final decision in the 500-plane Army liaison contract was being weighed last week, following tests at Air Force's Wright-Patterson flight test center in three competitive planes at Ft. Bragg, N. C.

Unofficial sources indicated that Cessna's all-metal Model 305 and Piper's PA-19 are leading it out for first place. The Cessna, due to its more powerful engine, apparently holds the edge as far as performance is concerned.

On a basis of comparative engine prices alone, it is assumed, the Piper entry price would be the lowest, and that this factor might be a strong influence in the decision if the performance differences were relatively slight.

Of 14 liaison aircraft currently participating in the USAF's evaluation to date, only five presented passengers, and one of these was damaged in preliminary light tests (Fletcher). The four competitors were Cessna, Piper, the Taylorcraft 18, Luscombe 8E, and the Fletcher FL-21.

Requirements established by the Army call for a plane which can:

- Carry a crew of two
- Cruise at 75-knot speed at not more than 75 percent power
- Climb at a maximum rate of 800 ft/min. in 10 sec. from 5000 ft
- Fly steady with no loss of altitude with a full gear load and full control at not more than 45 knots
- Have a service ceiling of not less than 17,000 ft

• Fletcher FL-21.—The Fletcher all-metal FL-21 served at Wright Field for preliminary test several days after the other entries. It was destroying from an altitude climb test when control surfaces were overloaded and damaged. The Air Force test pilot and observer landed on the Fletcher plane leveled off engine power and taxied to the position, with considerable damage. Plane was taken back to the Fletcher plant at Pasadena, Calif., for repair, but there were not consulted as close as it to make the flight-test deadline at Ft. Bragg.

Portuguese sources told *Aerospace* Wires that the plane had not been finally disqualified from the competition. Indication was that the FL-21 may be permitted to take a special "sideways" evolution test, with results to be considered along with performance of the other five planes.

Performance figures and specifications quoted by the manufacturers for the entries:

• Cessna Model 305—Cruising speed at 9000 ft. at 75 percent power, 90 knots;

cruise speed at constant altitude with full control, 46 knots; endurance at cruising speed, with 20 gal fuel, 5.1 hr.; rate of climb, 1290 ft/min. (cruising), 12,900 ft.; takeoff run over 50 ft obstacle, 990 ft; landing run over 39 ft; field length, 3000 ft.

Ranger aircraft speed with 26 gal in 100 miles; stall speed without flaps, 48 knots; with flaps, 42 knots; rate of ground run at 1200 ft gross, 506 ft; landing ground run with conditions 300 ft; maximum fuel capacity, 42 gal.; gross weight (under CAR part 3 weight category) 2100 lb.; ultimate gross weight (under CAR part 2 annex) 2450 lb.; weight empty, 1440 lb.; wing loading, 12 lb./sq. ft.; power loading, 11.01 lb./hp.; passenger capacity, 2+1; max. speed, 190 mph; max. range, 315 miles; max. climb at 1250 ft, 1600 ft/min.; for takeoff, and 190 ft; max. nose-up rating, 190°.

Ranger is all-metal high-wing design, using some parts of the commercial Cessna Model 170 airframe. The Model 170 parts used include slotted wing, with spanwise rear high lift flap, aft portion of fuselage, and tail surfaces, and aluminum spruce steel landing gear. New fuselage sections holding rear seat mudder panels which fold out of the occupant's way when not in use, and new design controls. Ranger has a maximum speed of 170 mph, standard max. altitude, 2500 ft; gross weight, 1600 lb.; field weight minimum required, 1200 lb.; payload over 50 ft obstacle, 1000 lb. It can land in 500 ft obstacle at 100 mph. It can land in 500 ft obstacle at 100 mph. It can land in 500 ft obstacle at 100 mph. The plane carries fuel for 6-hr. flight at a cruising speed of 130 mph. Top speed is 125 mph. Rate of climb, 1000 ft/min. in 600 ft. Hovering speed is approach speed over 40 mph.

The T-60P can fly below 100 mph.

It will still pull with power and flaps at 35 mph. Provides a single engine, single seat, and instrument panel, equipped with Dual Instrument "T" gage and switch panel.

• Cessna 170—Price carries a case of two, 40 ft radio, and 60 lb. non-tactical equipment. Powered by a Continental 98-125 developing 90 hp. Cessna weight at 1520 lb., empty weight in 950 lb. Payload with full load over a 50 ft obstacle at 950 lb. and landing over a 10 ft obstacle at 375 lb. It is reported. Top speed is 175 mph.

The T-60P can be flown under 40 mph. It will still pull with power and flaps at 35 mph. Provides a single engine, single seat, and instrument panel, equipped with Dual Instrument "T" gage and switch panel.

• All metal construction.

• Turbomeca Model 11B—Powered by Lycoming 230D engine, developing 125 hp. Cessna weight at 1700 lb., empty weight 1000 lb. Payload is 820 lb. including 250 lb. radio and 60 lb. non-tactical equipment. Takeoff over a 50 ft obstacle at 100 mph. It can land in 500 ft obstacle at 100 mph. The plane carries fuel for 6-hr. flight at a cruising speed of 130 mph. Top speed is 125 mph. Rate of climb, 1000 ft/min. in 600 ft. Hovering speed is approach speed over 40 mph.

• Piper Model PA-19—Plane is a modified version of the new commercial Super Cub PA-18. Powerplant is a 125 hp Lycoming engine. Takeoff over a 50 ft. barrier reported in less than 600 ft. at 1750 lb. gross weight. Empty weight is 1070 lb. Plane will carry enough fuel 150 gal. for 6-hr. cruising



LUSCOMBE 8E



TAYLORCRAFT 18



PIPER PA-18

Measure Would Streamline Research

Legislation streamlining military research and development has been introduced by Chairman Milford Tydell, one of the members of Senate Armed Services Committee and Chairman Carl Vinson of the House Armed Services Committee.

The measure would:

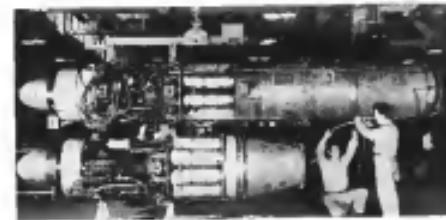
- Give the three military services a free hand to establish advisory committees for research and development activities.
- Remove legal prohibitions to the employment of scientific personnel who have foreign nationality by the military departments.

- Permit cost-type contracts, up to a five-year period, for research and development projects. The term of the contracts could be extended if appropriations were made.
- Authorize the departments to provide for test facilities and equipment in research and development contracts.

- Authorize the three services to provide that the government shall indemnify contractors against liability for death, injury, or property damage to persons or property resulting in a vessel or aircraft in the contract to be uninsured hazardous."

Urge An Appraisal

Air Force Arms with membership of 10,000 officers, Air Force officials, is urging that Fletcher Aircraft open a new commission similar to the Farnborough Commission to make a comparison of American jet power in light of post-war tribulations.



General Electric has developed this afterburner unit for its 12,000-lb-thrust J47 and J47 turbojet, believed to boost thrust to approximately 1500 lb. The photo shows typical increased length over the standard

with 200 lb. new members with paychecks, 40 lb. of rations and 60 lb. non-tactical equipment.

Taper engineers note the plane will need to exceed the Army requirements for the competition, previously stated. Obscure differences between the PA-19 and the civilian 75-18 Super Cub, are in the more powerful engine, modified cockpit, with greater visibility and a large shelf area of ease and for radio, searchlight and navigation equipment. Construction is steel tubing fuselage and metal riveted wing and tail.

The Luscombe 14P-L-A military version of the all-metal Super Cub carries a case of two, 40 ft radio, and 60 lb. non-tactical equipment. Powered by a Continental 98-125 developing 90 hp. Cessna weight at 1520 lb., empty weight in 950 lb. Payload with full load over a 50 ft obstacle at 950 lb. and landing over a 10 ft obstacle at 375 lb. It is reported. Top speed is 175 mph.

The T-60P can be flown under 40 mph.

It will still pull with power and flaps at 35 mph. Provides a single engine, single seat, and instrument panel, equipped with Dual Instrument "T" gage and switch panel.

• All metal construction.

• Turbomeca Model 11B—Powered by Lycoming 230D engine, developing 125 hp. Cessna weight at 1700 lb., empty weight 1000 lb. Payload is 820 lb. including 250 lb. radio and 60 lb. non-tactical equipment. Takeoff over a 50 ft obstacle at 100 mph. It can land in 500 ft obstacle at 100 mph. The plane carries fuel for 6-hr. flight at a cruising speed of 130 mph. Top speed is 125 mph. Rate of climb, 1000 ft/min. in 600 ft. Hovering speed is approach speed over 40 mph.



• The model J-47 is fitted to the new Republic XP-95 and North American F-86A interceptors. There are three J-47 engines currently in production: J-47-GE-11, J-47-GE-13 and J-47-GE-15.

Domestic Airlines Continue Gains

Most carriers show a substantial improvement over their first-quarter earning records of last year.

The domestic airlines continue their consistent improvement in earning accompanied by halting of their deficit. This is demonstrated by the results of the first quarter of this year, and by the preliminary indications of April and May traffic.

But activity in airways is more pronounced than ever before. In fact, the combined results of the 16 domestic airlines, if taken as a group, would show a net loss for the first quarter of \$1.1 million for first-quarter 1950 as against an adjusted \$5.5 million loss for the same 1949 period. Northwest Airlines, with a net loss of \$1,612,000, contributed more than one-half of the industry's current net deficit and detracts the group's record of solid accomplishment.

* Better Than Usual—Following the customary experience of Northwest, the industry's first-quarter traditionally shows the fewest earnings—despite relatively good corresponding periods of past years. However first-quarter net loss of the 16 domestic carriers:

- 1945—A deficit of more than \$13.8 million.
- 1946—A deficit of more than \$1.87 million.

It must be recognized that these staggering losses were subsequently modified somewhat by attrition and realignment. Nevertheless, even after such adjustment, it is probable that the 1950 showing remains the best in the last four years.

The 1949 and 1950 first-quarter reflected a series of bad credits, equipment grounding and inflationary cost conditions. The fact that substantial increases were made during the 1949 first quarter, with the further gains recorded by the 16 carriers in 1950, is tangible evidence of the improvement in the safety and dependability of air transportation.

A significant measure of the current gains in earning power is available through an examination of the results of the "Big Four"—airlines serving between 75 to 80 percent of the domestic traffic. These carriers—American, Eastern, United and Trans World—showed a consolidated net loss of about \$5.3 million for the 1949 first quarter. The same group reported a net loss of less than \$3.7 million this year. This improvement would have been greater if not

for the 11-day strike on American during March.

Increased efficiency and improved cost control are in evidence for most carriers. This is highlighted by United's quarterly report, the only detailed account which has been issued among the Big Four.

During the first three months of 1950, United's operating revenues were up 4 percent while operating expenses increased only 2 percent. United's operating cost per ton-mile was decreased 10 percent over 1949's first quarter. Charged from 61.74 to 59.94. Although traffic increased, United reduced its personnel at the end of the first quarter by 2,012, to 9,477.

* Let the Credit Go—United's success story, something a steady credit approximation personally at office, shows the strengthening of airline credit. Last September, when the company ordered two DC-6s, it arranged a \$3.5 million standby credit with 35 banks in case it were needed to pay for these new aircraft. Deliveries of the five planes will be completed shortly. Payments will be made from the company's own funds without recourse to any new borrowing.

With additional funds on order and United's debt delivery only one year, United's net debt position can be attributed to its ability to finance all outstanding capital requirements as well as to maintain a broad debt retirement schedule.

* Third Post-Paid—The effect of an accrual post paid gain is apparent in the 7.3 percent increase in total ton-miles during first-quarter 1950. Total revenue, however, increased but 2 percent, reflecting the slight scale of unit rates in effect for the Big Four.

As with most carriers, interest payments have been minimal characterized as a minimum of 1 percent. Eastern, United and Trans World in the Big Four, temporary gains can be offset easily and apply also to periods look to early 1948. Until permanent rail rates are established by the Civil Aeronautics Board all current results are subject to qualification.

TWA shows a consolidated net loss of \$1,840,000 for first-quarter 1950, as compared with a net loss of \$3,112,000 for the same period in 1949. No indication is provided as to how this loss

in both years was divided by the domestic and international divisions.

Further, TWA is subject to important cost rate proceedings on both domestic and international routes. The results are published semiannually and quarterly reports give no indication as to how these cost computation questions are handled.

Nevertheless, the TWA performance is noteworthy while total revenues for the current first quarter are down slightly, the company's net loss was cut by more than one-third. A paper companion with last year's results will be attached only when the company's reports are filed with the CAB.

It appears that both American and United have reduced their first quarter losses by applying tax credits which will be offset by the maximum deductible periods of 10 years. This practice tends to modify and delay depreciation in accounting and gives a more accurate picture of results.

* North-South Profits—Unlike the transcontinental carriers, each north-south lines as Eastern, National, and to a lesser degree Delta, experience their most profitable season during the first quarter. Comparative first-quarter net totals for these carriers may be summarized as follows:

	Net Profits	
	1949	1950
Eastern	\$1,508,000	\$1,250,000
National	1,043,313	777,919
Delta	272,644	235,479

The operations of Eastern and National reflect tangible results and are not due to any fiction. They are therefore encouraging indicators of the industry trend for the year.

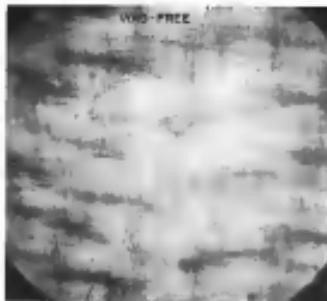
* Capital Gains—Capital continues its outstanding record of low-cost operations and expansion, particularly over corresponding periods of a year or less. The company showed as operating loss of only \$175,012 for the first quarter of 1950, against the loss of \$151,480 in the 1949 period.

It is also apparent that Capital, admittedly a carrier with a troubled past, has continued to lessen its dependency upon rail compensation. For example, during the 1949 first quarter, about 28 percent of its total revenues came from mail payments. For 1950, this ratio was down to about 24.5 percent.

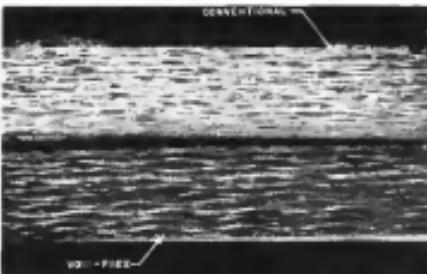
The results achieved by the domestic carriers for the 1950 are encouraging portents of continuing gains this year.

It must be recognized, however, that for the major profitables airlines, the full reddit income tax will be in effect and may prove a sustaining factor in the year's final accounting of net earnings.

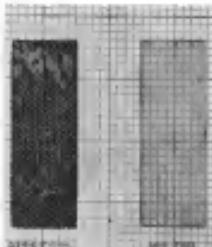
—Selig Alschuler



A 25K MICROPHOTOGRAPH demonstrates fiber voids in conventional laminates. Void-free material shows only a few small voids.



CROSS SECTIONAL responses of conventional and void-free laminated material showing the larger type of voids, which appear to concentrate at the center of the material.



POROSITY and transparency comparison of void-free and conventional laminates.

Bubble-Free Laminates Stand Up Better

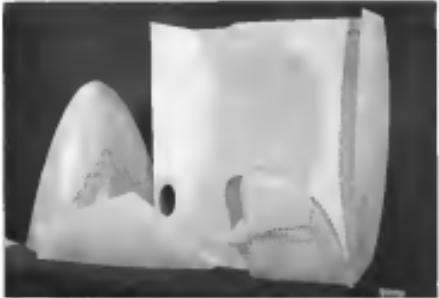
Goodyear finds strength and resistance to rain are greatly increased by making laminates void-free.

Rain and moisture have never gotten along well together—but some new developments among us promise a program specially by Air Materiel Command and carried out by the GoodYear Air Craft Corp. promise to resolve the problem.

The familiar carbon—and many an-

other new structural part—when made dry will together—but some new developments among us promise a program specially by Air Materiel Command and carried out by the GoodYear Air Craft Corp. promise to resolve the problem.

GoodYear found that by developing a void-free Neoprene-coated lamina-



TYPICAL CLOTH and plastic laminated parts for the Convair F-102. Further include fuselage skin, rubber cap, a tool box and a life preserver.

the smooth surface of these cloth and plastic parts fit them ideally for application on high-speed aircraft in nose-pitot strakes.

As a result, the laminated products have won more contracts because crowded with enthusiastic users, who were impressed with the ease of processing and the surface sealing involved. There was, of course, some initial difficulty with the eye.

For example, little attention was paid to the presence of voids within the laminate, although it had been shown that such voids could easily be detected by strength defects in the material.

In the case of phenolic resin-catalyzed laminates, physical properties varied almost in direct proportion to the absence of voids.

► **Voids.** Two recognized general classes of voids exist:

• Enclosed vesicular type of microcellular air is located along the glass fibers and designated "blister voids."

• Large bubbles or voids of various sizes are located between the plies and situated in direct opposition to the absence of voids.

Two effects contribute to the formation of voids. Residual air may be incorporated into the laminate during forming and not be removed or may be irreversibly compressed, or vapors can be formed by the curing process, which boils off volatile compounds from the resin.

The cure? Proper control of the laminating process avoids both causes and gives a void-free laminate.

It is pretty obvious that a physically perfect material is going to have better properties strength-wise than a piece which is loaded with voids, pits, cracks, and the myriad defects in laminates

necessary to wet-in-impregnate the cloth material, to impregnate paper in the laminate, or to wet coatings. But void-free laminates have been successfully used as pressure vessels because of their very low porosity.

► **Transparency.** Viscous, laminated material is quite transparent. This results from the unique nature of infrared film resins and glass fibers.

The most important application of this property is in quality control, because a quick visual inspection can detect any of the common faults after three weeks, which might never

With sandwich structures, the core and bonding of the core can be checked visually, because the core can be examined for non-filled cells, as far back as bonding.

► **Advantages.** General results of Crossley's investigation show the resulting laminates to be superior to the conventional materials, with 25 to 85 percent improvement in physical strength.

• 8 to 20 times better in bending resistance.

• Non-porous and impermeable to fluids and gases.

• Absorbency of only about one-third as much water.

• Frictionless, non-sealing surfaces.

• Transparent to permit any visual inspection.

New British Cabin Air Conditioner

An all-purpose air conditioning track which "plugs in" to aircraft on the ground promises to be the British solution to the problem of providing a comfortable environment for passengers during air travel. The track contains a single slot all the fasteners necessary to fit conditioners in aircraft cabin areas.

The unit, manufactured by Sir George Godfrey & Partners Ltd., operates on the air cycle principle.

It is capable of either heating or cooling air, increasing or decreasing its humidity, spraying anti-icing compounds onto the cabin and providing pressure for pressurizing the fuselage.

British Overseas Airways Corp. is expected to be the designer of the track. The company was planning to fly a test in a York freighter to Calcutta and Nairobi for service testing.

General air conditioning of aircraft is receiving increased attention by U.S. carriers. It was discussed at great length at the recent Air Transport Assn. Engineering and Maintenance Conference at Kansas City. American engineers agreed that airline management soon would provide more funds for the purchase of such equipment to cater more completely to passenger comfort.

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- **CLOSELY SELF-CONTAINED**—few weight and simplified installation.
- **SIMPLIFIED CONSTRUCTION**—maintenance costs are reduced to a minimum.

Another example of the developments that have made Eclipse-Pioneer the leader is its Gold.

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Muffler Swallows Turbojet Noise

A portable muffler, which can be packed up against the tailplane of the aircraft to cut down noise while the engine is being run up on the flight line, has been developed by Industrial Sound Control, Inc., Hartford, Conn.

The muffler looks like a large three pipe placed horizontally, with an elbow at the left end open to the sky. The muffler is attached to the straight end so that by the time sound reaches the left end, it is reduced to about the level of street noise, the manufacturers report.

Inside of the pipe has an hexagonal shape with the key surface consisting tiny perforations similar to those in an acoustically treated ceiling. Noise trav-

els through these perforations to second chamber, instead, then through an other perforated plate into a much reverberating chamber.

Perturbed tubing to spray water for cooling purposes runs around the inside of the pipe.

This cooling circuit is formed into rings spaced several feet apart. The water spray also helps break up the sound waves.

The mufflers are designed to work stand temperatures up to 400°F. without pressuring, says the maker. The further claim is "the need for even our water consumption, which was a hindrance to noisy strength at jet sound control."

Offer Finding Guide To German Patents

Copies of German patent applications telephoned during the war now can be easily obtained by U. S. citizens. The Office of Technical Services of the Department of Commerce has announced the availability of a "foreign" guide for these documents entitled "Subject Guide of the Unpublished Applications for Patents Filed at the German Patent Office—1940-1945."

The guide is a subject index to 200,000 applications filed during this period. It divides them into 11 major industrial groups, 88 classes and about 550 subclasses.

The new guide was compiled by the Association for the Defense of Intellectual Property, Paris, France. OES took charge of it for American users.

The Association is offering, for a small fee, specimen copies of complete patent applications. We are not only giving reproduction costs, but the task of locating the application from about 1000 trials on which they were copied.

Please writing to obtain further in-

formation on patent applications in their field of interest can provide German language statements in the form of printed "fill-in" columns which are listed in the new finding guide.

Better Screen Grids For Jet Air Intakes

An improved metal screen grid for protecting air intakes of jetdrives or grilles has been developed by the Aerodynamics Research Laboratory of the University of Kentucky, under supervision of the Air Materiel Command.

The new grid has impaled 50-cell shell casting holes, extruding an inlet duct at speeds up to 625 mph. Pending its use of the device is as lighter than loss of about 6 percent. This compares to present intake grids now and which generate resistance of 275 mph and cause a 4 percent loss in thrust.

AMC engineers believe, however, that the first grid developed under the program will be able to stop damage at impact speeds up to 700 mph with a frontal loss of less than 4 percent.

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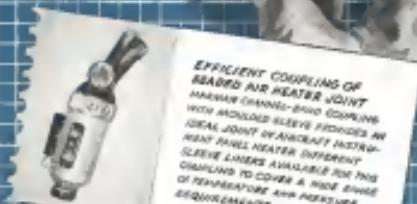


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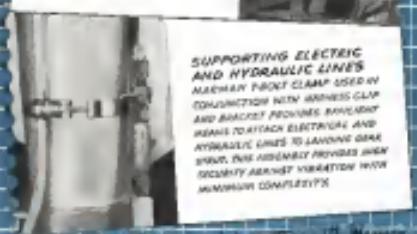
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ENGINEERS NOTEBOOK



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Giant Hydropress Built for Lockheed

An 800-ton hydropress press, said to be the largest in the world, is being built for Lockheed Aircraft Corp. Fabricators at the Bethlehem Steel Foundry and Machine Co., Bethlehem, Pa.

The Berthak, Calif., company reportedly will use the press to stamp out hand-to-hand aluminum alloys and titanium sheet sheets.

The equipment is designed to take sheets of aluminum alloy jets, thick, 10 ft. wide and 30 ft. long. Millions enter the press at "an example of the high quality fabrication equipment needed to produce high speed aircraft of the future."

The unusual feature of the machine shown according to Bethlehem, is its flexibility. One can use patching plates opposite the anvil, change pressure, sequence of operations and speed. It is designed for drawing and forming work requiring setting dies for steel-battering and for rubber pad work. Press will be as high as a 3-story building and with its foundation will weigh more than 30 million pounds.

Flame-Retardant Developed by Martin

A new compound designed to make fabrics flame-retardant has been developed by the Glenn L. Martin Co., Baltimore, Md.

Product is a protective resin, called "HFM," which was developed primarily to meet the need for flame-retardant curtains and draperies in the Martin B-57.

Advantages claimed for the compound is that it is durable enough to withstand normal laundering and dry-cleaning and does not add noticeably to weight of fabric. Martin says fabrics treated with this agent remain pliable and soft.

It has licensed the product to E. I. du Pont de Nemours for further research work.

This firm is trying to develop a production process to manufacture it commercially. Martin says the material treated with HFM can be used with clothing fabrics and other textiles and that it is especially well adapted to meet the Army's flame resistance requirements for clothing materials.

The Post discovered and now is marketing a durable flame retardant called "Teflon" for treating carpets and rayon fabrics. According to Martin, the new product is expected to complement Ekon.

VISIBILITY



• by Swedlow

F94

Lockheed's new jet fighter for U. S. A. F. is designed to fly and fight in pitch darkness, with high-altitude interception of enemy aircraft as its principal function. For quality and dependability, a SWEDLOW produced acrylic enclosure was selected to protect the pilot and navigation of this latest Lockheed contribution to the American aircraft industry.

15 YEARS OF PIONEERING IN ACRYLICS... RECOGNIZED SPECIALIZATION IN AIRCRAFT

...plus perfection in optical properties...these are factors in making SWEDLOW a part of many notable developments in the aircraft industry.

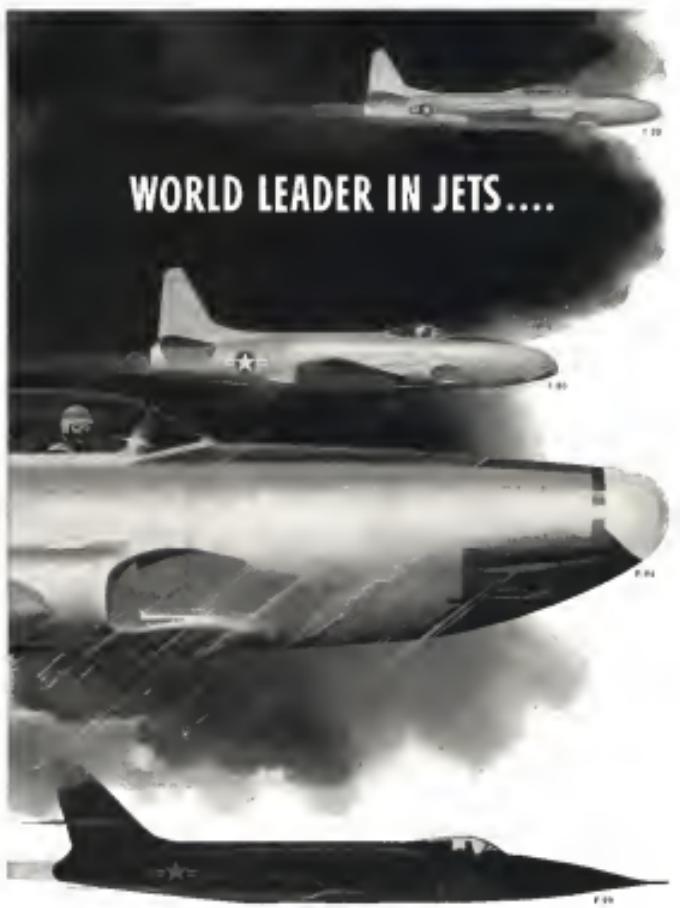
We shall be glad to assign a staff engineer to work with you in any applications in industry using glazing materials.

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Among other leading aircraft companies in which Swedlow achievements SWEDLOW also in acrylic had a share are

- Boeing Airplane Company
- Consolidated Vultee Aircraft Corp.
- Hiller Helicopter, Inc.
- McDonnell Aircraft Corp.
- North American Aviation.
- Northrop Aircraft, Inc.



LOCKHEED PRESENTS THE F-94

The largest producer of jet aircraft in the world is the Lockheed Aircraft Corporation.

More jet-propelled airplanes have come from the Lockheed plant than from any other factory. In fact, Lockheed has built jet aircraft at the rate of at least one a day—every day for more than five years.

Lockheed produced the first U.S. operational jet airplane—the famous F-80 Shooting Star, long the backbone of America's fighter defense.

Lockheed leads in jet training programs, too, producing the two-place T-33 and the T-33 jet trainer for the Air Force and the Navy. These are the only jet trainers produced in America today.

And to win and maintain jet superiority in all areas of combat, Lockheed has built the long-range, swing-wing F-104 Jet Fighting Falcon.

Now, for high-altitude interceptors, Lockheed is building the new F-102 All Weather Interceptor, capable of around-the-clock, around-the-clock defense.

These dependable Lockheed jets have many natural advantages—speed, strength, and predictability. And the experience obtained in the design, development and manufacture of these precision jet airplanes is invaluable in the Lockheed laboratories where the planes of the future are taking shape today.

LOCKHEED

Aerospace Corporation, Burbank, California
Lockheed for Leadership

British Turbine Progress Outlined

"Flight" editor feels water-methanol injection and afterburning open way to 10,000-lb-thrust engines.

British relies on key factors of gas turbine power for aircraft were outlined by G. Geoffrey Smith, director editor of "Flight," at the recent National Aerospace Meeting of the Society of Automotive Engineers in New York. Comments made by this well-known English writer on jet propulsion topics, who obviously is familiar with British developments, bring several basic areas of development into sharp, fuel consumption, operating costs, power requirements, and technical know-how between U.S. and England.

Advantaging the maximum progress made in jet aircraft power in the world is the Lockheed Aircraft Corporation.

More jet-propelled airplanes have come from the Lockheed plant than from any other factory. In fact, Lockheed has built jet aircraft at the rate of at least one a day—every day for more than five years.

Emphasizing that it requires a large expenditure with return to maximize proving facilities, he held that so to bring a modern high-power strength turbine through its development cycle and into production places to the stage of operational reliability may run as much as \$1.5 to \$1.7 million, and span a period of 3 to 4 years. And he added that no company could afford to produce a jet aircraft with only one turbine each if it had potential military utility, hence, military backlog.

Higher Than Now—Smith stated that with the aid of water methanol in ignition and afterburning "we can claim to be on the threshold of the achievement of 10,000 lb thrust from a single unit."

He held the military had not yet discarded the centrifugal-type turbine and cited the de Havilland Ghost as being actively developed for the R.A.F.'s high-altitude fighter, the D.H. Venetia. He also mentioned the D.5300 British Rolls-Royce泰普 as being more than 400 lb lighter than the axial Avon.

Cost of development, production and maintenance of the centrifugal compressor is less than for the axial unit, he said, and was estimated at 10 percent less expensive to develop from a design point of view. The axial compressor, however, offers greater efficiency later, he said, was 79 to 80 percent.

Compressor efficiency of axial type was at about 85 percent. Emphasizing a higher compression ratio, a lower specific use of fuel consumption is possible—a reduction of 12 to 15 percent.

He noted, too, that turbos powered refines now being—Cessna, Bellanca, and Vickers—had centrifugal type en-

gines. Axial Passes—but major emphasis, he said, was nevertheless being placed on new and new types for military service, with current attention being focused on the Rolls-Royce Avon and the Armstrong Siddeley Sapphire. These available jets, now Britain's most powerful types probably will be used initially in that country's bomber fleet.

The Avon, with a maximum 6200-lb-thrust rating, gives that fighter a 10,000-lb-thrust rate of climb, he said.

He had news for North American F-86 with its GE J-47 jet, and for the de Havilland CTI 30 turboprop unit. Fred Foster-Smith said that "for a particular aircraft it would be more economical to quote the rate of fuel consumption 'for all purposes,'" that "the day has gone in high-altitude, turbine-propelled aircraft to quote basic engine fuel consumption; we must recognize what is used in the matter of auxiliaries and other aircraft allowances."

He added that the best engines were those available to blending for auxiliaries like were the centrifugal types.

Specific consumption of the best engine, he said, did not necessarily afford the best indication of suitability for a specific job. He held that some turbines compare turbines with piston engines and need to disregard strengths in auxiliary services. The turbine powerplant which "can furnish static powerplants and driving, and especially use 500-600 lb weight of equivalent auxiliaries, shows great advantage in respect of the power margin."

Smith, though, declared that a British laboratory had reduced the rate of fuel consumption 9 percent in 3 years, through improvement in combustion techniques and aerodynamics.

Further benefits may be expected through current research on many characteristics, Wright said, associated with airframe distribution and aerodynamic methods and mathematical improvements. These benefits, coupled with other from fixed or moving components, will offer another 15.20 percent reduction in the fuel consumption in the next 3 years. At an 8.5 lb/lb thrust/hr sea level rate and about 11,170 lb thrust at 6000 mph in the stratosphere.

It was disclosed that with improvements in the Comet's Ghost turbines, the de Havilland's Major F. B. Halford estimates a further 5 percent reduction in specific fuel consumption figures.

Smith said that in 1960, the Comet has been down for a stretch of

The WRIGHT 3250 H.P.

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More than blowdown turbines on a piston engine. Utilize the exhaust gases from the piston engine to turn the turbines. Then convert the blower... higher power... lower fuel consumption... longer range... for military and commercial operations.

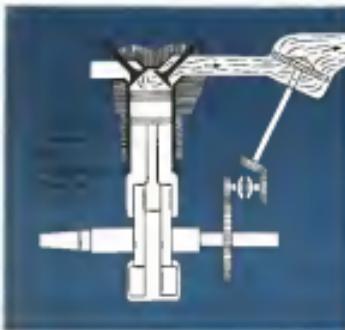
The Wright Turbo-Cyclone 18—rated at 3250 horsepower—is the first and only aircraft "compound" engine to pass a military model test, go into production and fly in a production airplane.

A Tribute from the Navy

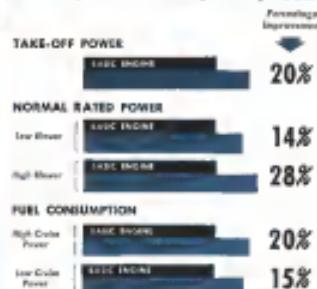
The Turbo-Cyclone 18 now powers the U.S. Navy's long-range patrol bomber—the Lockheed P2Y-4—and the Martin PSM-L. It brings to these aircraft the proved reliability and operating economy of the Wright Cyclone 18 PLUS the lower weight and compactness of the gas turbines.

3000 hours successful test time

Behind the Turbo-Cyclone 18 are over 3,000 hours of experimental ground and flight tests... plus the millions of flight hours caused by the basic Cyclone in military and commercial service.



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MORE POWER TO THE NAVY

Turbo-Cyclone 18 now in production for Lockheed P2Y-4



WRIGHT IS PIONEERING IN ECONOMY

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Wright Aerautical Corporation, Wood-Ridge, New Jersey

CURTISS WRIGHT

5½ hours with standard tankage, and the new series will provide more wing tankage (and a bigger leading part). Tests have been at 33,000-40,000 ft, but, he says, the Comet will go to 45,000 ft.

► Ignition—Smith commented on the Royal Aircraft Establishment-developed high energy ignition system. It is not yet in general service use, but has been successfully tried in both test cell runs and in flight. Weight of this equipment, with screened plug lead, is approximately 10 lb.

The device has enabled downgrading of the torch igniter and its auxiliary fuel

spay, since the electrical discharges produced (1/kv/c) have such high energy and short duration, that each can create suitable conditions in the combustion chamber—providing sufficient quantity of fuel and spark, thus creating sufficient volume of the burning gases to produce a general "light-off."

Because electrode erosion of the orthodix high-voltage spark plug was too rapid, a carbon-discharge plug with a large electrodes was put chosen—two heat-treated, carbon steel electrodes separated by a 0.015-in. annular gap housing a compressed mass 40% with electrode material. The mass is coated with

a thin layer of carbon and in normal operation, the plug's position is in the chamber insulation that deposits.

An induction coil, operated by a switch from a 24-v. dc supply, repeatedly charges a capacitor through a tested spark gap until condenser voltage reaches about 2000 v. Then the condenser discharges through the sealed spark gap, in resistance and the plug, all in series. Discharge duration is about 30 microseconds; peak current about 1500 amp.

In test cell trials, successful ignition has been achieved over a range of heating combustion conditions. Smith said, from high pressure equivalent to high flight speed at low altitude to low pressure at high altitude.

In flight trials, successful flights were obtained with several burnouts up to about 35,000 ft.

► Avionics—Because afterburning equipment imposes a penalty of 2.3 percent on cruise fuel consumption, Smith said that the British Interavia manufacturing authority set civil aircraft, particularly for transit,燃氣 turbine gear, is estimated to be a maximum of 16-12 percent. A higher value would be considered to indicate that compressor and turbine characteristics were poorly matched.

► Turbosuper—Smith said that Britain expects a progressively stronger challenge from America in the turboprop field.

He emphasized British confidence in the relatively low-powered turboprops for civil use, citing the Manx and the Dart.

Fist British turboprop engine to see regular military service, he said, would be the Armstrong Siddeley Python, now being produced for assembled strike planes.

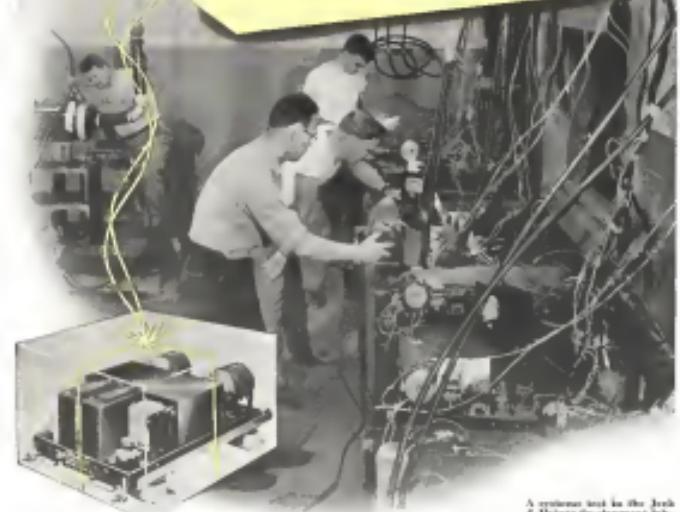
The coupled Manx is being used in the new anti-submarine variant. In the summer, Smith said, "the coupled turboprop, offering cruising economy and high maneuverability, will be flying on the front line, probably ratings."

► U. S. Defense Cooperatives—Summarizing the enormous benefits to be derived from technological cooperation between the two countries, Smith held that security considerations must not be allowed to stifle liaison. He expressed belief that Britain might consider experimental installation of their most advanced turbine units in the "equally advanced air forces."

He said that continued technical liaison could materially reduce the cost of peace because initial acquisition of defense power units could be done more easily.

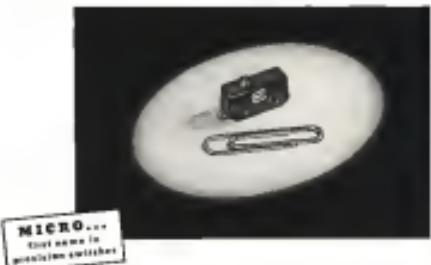
Standardization of off-the-shelf parts and accessories should be advanced, or least as it did not impede design, he said, needing special air standardization of ideas.

MEN AT WORK ON Lighter, Smaller Packages of Power!



A system unit in the Jack & Heinz development laboratory. Inset: Typical system unit control panel.

**Here's the Subminiature ...
the smallest, lightest switch
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When small space and light weight are important factors, the extremely small MICRO Subminiature Switch meets many tough requirements.

The Subminiature measures .85/16" long by .36" high by .16" wide... less than 1/35th of the volume and weight of the standard MR-301 single-pole pressure switch.

Electrical capacity tests indicate a rating of 3 amperes, 115 to 220 volts ac, and 2 amperes, 28 volts dc.

The MICRO Subminiature is enclosed in a plastic case and protected with gas plasma activated. The contact arrangement is single pole, double throw. Terminals are of soldering type. Call or write MICRO SWITCH, Freeport, Illinois, or any branch office for complete information.

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The extra lightness that you get only with magnesium has meant improved performance whenever magnesium has been used. But dead weight reduction isn't the whole story—many leading aircraft designers are finding that the proper use of magnesium can also mean sizable reductions in fabrication and assembly costs.

Forged magnesium castings are not only lighter, but often cheaper than those in other materials because of the ease with which they can be machined. A new high strength aluminum alloy with low notch sensitivity makes it possible to replace many costly built-up beams with low cost, efficient magnesium extrusions.

The low specific gravity of magnesium means thicker skin can be used. The greatly increased stiffness obtained reduces the number of stiffeners and formers and permits simplification of the structure with attendant reduction in fabrication costs. For more detailed information about the use of magnesium in aircraft, write Dept. Dugt., MG-77 in Midland.

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A high strength-to-weight ratio combined with maximum lightness is common to all forms of magnesium. This desirable combination has been the answer to many difficult design problems. Furthermore, magnesium is readily worked by established techniques.



Fuel Control Studied

A special laboratory for fuel system studies in high-speed aircraft has been set up by Convair-Vought Aircraft in Dallas, Texas.

United Aircraft Corp.'s fighter plane division built the test lab itself by converting a park space occupied during the war by North American Aircraft, Inc.

CV engineers say that until recently this type of facility would not have been necessary. But with the advent of high speed, high-altitude craft, the center of gravity has become more critical. The new lab should aid engineers in fuel system designs, stability and control studies, and in the evaluation of fuel systems under close limits while fuel weight changes at various points in the plane during flight.

The new lab will permit testing of complete fuel systems. It is equipped with a 1000-gal underground tank and has automatic fire protection.

Aircraft Static Data

Recommended procedures for static grounding of aircraft during fueling are included in a report submitted by the Committee on Aviation and Aerospace Fire Protection of the National Fire Protection Association's recent annual meeting in Atlantic City, N.J.

Recommendations will be positive ground to ground static charges—in place of previous procedure of nearby grounding planes on aircraft and fuel tanks.

The report states that static charges will die off where ground resistance is as high as one megohm. This usually prevents use of bonded hoses. Special grounding electrodes may be necessary where resistance are abnormally high.

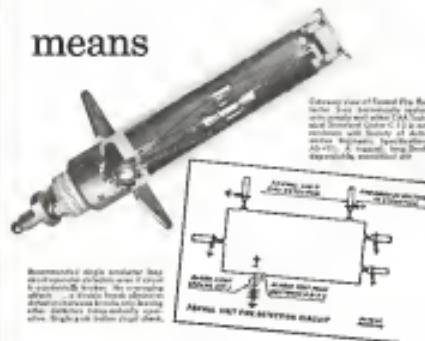
Detailed information on the development of electrostatic charges on aircraft during flight, at rest, and during refueling operations are given in the NFPA recommendations. The American's address is 60 Bateman Court St., Boston.

Weathers Lights

A "wing box" at Westinghouse Electric Corp.'s Lighting division at Cleveland, Ohio, is being used to put outdoor lighting equipment through the paces to see how it will stand up when it is put into actual service. Lighting units are given the equivalent of 10 years of weathering, or about 1600 h of accelerated testing in extreme temperatures. Data should prove interesting to airport operators and equipment manufacturers.

The wing box has a tall fog shield effects unit in the nose; instrument air at an oceanic band; in the after-control, or of a maple leaf-shaped sea-

Airline after airline
is learning what
positive fire detection
means



The Fenwal Aircraft Fire Detector has been designed for positive detection of fire or dangerous overheat conditions. The unit combines the best features of rate of rise and fixed temperature devices. Fenwal Fire Detectors are permanently calibrated. Hermetically sealed stainless steel unit. Easy to install; single terminal leads out connection wires. No bulky panels, relays, supervisory instrumentation to buy or maintain.

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Further information on request



TEMPERATURE CONTROL ENGINEERS

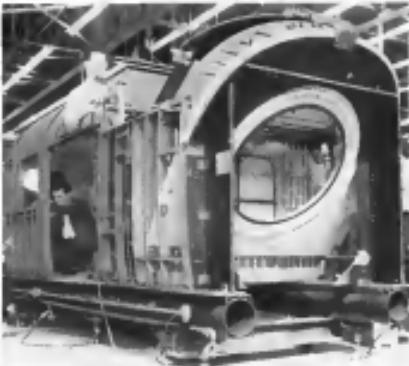
THERMOSWITCH*

Reg. U.S. Pat. Of.

Aircraft Fire and Over-Heat Detectors
SENSITIVE... but only to heat



ALUMINUM ARCHES for the H-19's deck are bolted to the fuselage pg. Near completion are instrument panel plate installed.



NEARLY COMPLETE CAFFIS FRAME gets instrument panel plate installed. The center aluminum section is built-in bottle for 600 hp. Wasp engine.



LIFTED ONTO 278-gal. fuel tank, which is nested into the fuselage, the fuselage gets its skin fitted.



ABOUT 40 PERCENT COMPLETE, two fuselage nose along the line. Flight decks have not yet been added.

Sikorsky Aircraft has been busy on an order for five of the big Air Force H-19As, six-seat transports shown in production line photos above. H-19 has normal gross weight of about 7000 lb. and a military payload of about 1800 lb.

In spite of its size, it can be readily disassembled for storage in a Parchell C-82 Packet. Ten passengers can be carried in the passenger cabin in addition to a crew of two on the flight deck. Unique nose mounting of the 600-hp. Wasp engine permits easy access for maintenance and replacement through a pair of clamshell nose doors.

Sikorsky also has a Navy order for ten of the craft designated H-9B.

A Copter Grows At Sikorsky

Bendix-Pacific

HYDRAULIC PRESSURE REDUCER VALVES

to meet your EXACT requirements

Standardized Bendix-Pacific Hydraulic Pressure Reducers are available from Pacific Division, Bendix Aviation Corporation, to meet a wide range of applications for both 3000 and 1500 P.S.I. systems. These of the valves are illustrated here. This division also offers its engineering assistance for the design of special valves, or the adaptation of Bendix-Pacific standardized valves to meet your exact requirements.



PRESSURE REDUCERS AND RELIEF VALVES

Assembly No. 411590

Standard Unit set at 1200 ± 50 P.S.I.

Assembly No. 411594 2

2000-3000 P.S.I. range of adjustment—
low rate spring.

Special versions to meet your exact requirements.



PRESSURE REDUCERS WITHOUT RELIEF VALVES

Assembly No. 413300

1500 P.S.I. inlet 1250 P.S.I. outlet

Assembly No. 413790

1500 P.S.I. inlet 1500 P.S.I. outlet

Assembly No. 507000-2

1500 P.S.I. inlet 1500 P.S.I. outlet

Special versions to meet your exact requirements.



PRESSURE COMPENSATED REDUCING VALVES

Assembly No. 412950

3250-3400 P.S.I. inlet approx. 2000 compensation

Assembly No. 410830

3000-3100 P.S.I. inlet approx. 2000 compensation

Hydraulic pressure valves with controlling pressure.

Typical application: hydraulic pressure proportionate to fuel pressure for in-air refueling.



Pacific Division

Bendix Aviation Corporation

SALES & SERVICE

Making Executive Travel Safer

FSF director tells CAA: Pilot proficiency should be maintained, but the boss may need some training too.

By Alexander McNamara

Executive air travel on multi-engine planes should have a good record. But nonstop flying planes can make it better still.

Proscriptions for even safer business air travel as the future was given last week to members of Corporation Aviation Owners Assn. at Washington. Jerome Leiferer, the director of Flight Safety Foundation, made the recommendations, with his assistant, Miss Glenn Herlihy, as his spokesman.

Presented practices for safer executive flying include:

- Educate the boss in that he doesn't demand the impossible from his pilot.
- Adopt safety practices for emergency procedures and equipment.
- Request pilot to conduct flight proficiency with periodic flight checks and orientation tests.

Leiferer's analysis of multi-engine executive plane records shows that final accidents in 1948 and four in 1949. During those same years domestic air lines averaged 460,000 hrs. of flying for each fatal accident. If executive planes had to, well, they would have had to fly 2,000,000 hrs. in the two years. But no figures on the hours flown by busi-

ness aviation during those years are available.

Warning against dangers of pressure planes as a pilot by an aviator to 40,000 feet, Leiferer was given. The best single item was his endorsement of executive flying as the most satisfactory and safe type of transportation, with propery conducted.

Last of "do's and don'ts" for safety prescribed by the air safety organization includes:

- Don't order a flight when as the opinion of the pilot it cannot be completed safely and in accordance with regulations.
- Don't insist on the new double-bogie air lighter or straining part of a flight if it is anticipated within 12 hr.
- Do realize that all newly employed pilots are properly and recently checked out.

Importance of maintaining pilot proficiency was emphasized by the first that, according to Leiferer's analysis, all but one of the six fatal accidents in 1948-1949 were attributable to pilot "inexperience."

Developed by Air Navigation Development Board.

Arthur Goldring, radio engineer for a commercial unit of the board, was awarded the association's 1949 award for outstanding merit to the administration of executives in travel.

William B. Jelles, of Republic Steel Corp., Cleveland, continues to chairmen of CAA, and N. F. Salter has been reelected executive director of the organization.

Addition to General Motors Corp., owner of one of the largest corporate fleets of executive aircraft in the country, to the membership of the association, was disclosed in the meeting. The association now includes as members over 60 firms, with more than 45 different types of business and industry represented. Their executive fleets include more than 150 airplanes, of which approximately 151 are twin-engine types.

Authorize Fields Near National Parks

Added stimulus to personal flying is seen in recently approved lightlets making possible development of airports near the establisment of national parks and monuments. Contained in the bill was an authorization of \$3 million to the Department of Interior to carry out the program.

Some airport sites have been selected tentatively and are included in the Civil Aeronautics Authority's 1953 National Airport Plan, including a field to serve Yellowstone Park.

CAA recently agreed to include data on parks and monuments on the backs of its sectional charts, along with a statement requesting pilots to maintain at least 2000-ft. altitude so that quiet enjoyment of parks will not be disturbed.



SALESMEN VIEW SUPER NAVION

Ryan distributed last week the new 250 Super Navion during a sales meeting in San Diego while plans for 1958 were formulated. All but one of the 16 total sendees in 1948-1949 were attributable to pilot "inexperience."

Super Navion first order is placed. One of the main bottlenecks appears to be shortage of the new Lycoming engines. Deliveries of the Utility and De Luxe 285 are being handled immediately.

"A breath of fresh air" at 40,000 feet is not recommended. Feel-proof cabin pressurization is the key to a pilot's life! A primitive brain controls the vital units of PACS pressure system. Mass Flow Valve, Cabin Safety Valve and Pressure Regulator all function automatically with manual override for emergency operation. Write for complete information.

PACIFIC AERONAUTICAL CORPORATION
MANUFACTURING DIVISION
Inglewood, Calif.

OTHER OFFICES AT ENGLEWOOD, SEATTLE, AND CHICAGO. 1948-1949 SALES 1900 UNITS. 1951 1000 UNITS. S. L.

IAS Group Hears Lightplane Ideas

Suggestions vary from forcing air over foils by a blower system to building craft with flapping wings.

Landing and takeoff runs of personal aircraft may be sharply reduced by use of a blower system forcing air over the wing tips. The maximum lift coefficient of a wing can be raised from 5.00 to 4.4 by using a blower rigged to the power plant. That was the report of Kenneth Kamm, director of the school of engineering, Wichita University, to the seventh annual personnel aircraft meeting of the Institute of the Aeronautical Sciences at Wichita.

From NACA's long history for the Office of Naval Research, as the Wichita University said, Kamm reported, certain air was developed for the slotted flap and bowed nose of the wing section. The results of the artificial wind over the flap were good, he said. But the system is worthless over the leading edge of the wing.

No. Stalling—Kamm's calculations showed that a current lead plane with 30-lb./sq. ft-wing loading, using the windshaped wing, would have shorter landing and takeoff runs and increased lateral control. He said that with the blow system, the wing will not stall out until about 100 ft. above. He estimated that such a plane would need only 300 ft. of takeoff run instead of its usual 400 ft. Landing run would be reduced to 385 ft. from 525 ft.

Ram air has coefficient ratio of 4.4 on a ram air test with flight at 20 degrees, with artificial wind over the flap only.

The blower-type system but of wing stabilizers is the result of knowledge gained from the Germans after World War II. Kamm said that experiments will consist of section control of wings with the ram air plus.

Paul E. Wink, director of the potential aircraft research center at Texas A&M College, told the aircraft engineers that a set of specifications for designing and specifying planes has been established under sponsorship of CAA and the Department of Agriculture, and high stress has been placed on pilot safety.

High G centrifugal seats and the Correll crash-occupant accommodations for safety are being incorporated in an experimental plane now under development at the college.

► Spray Spots—There are some of the specifications outlined by Wink for spray systems for spraying planes:

- Fine and quick spray patterns
- Aligned nozzles
- Better serviceability of nozzles
- Loads from 500 to 1,200 lb.
- Easy handling and easy storage from

driving to chemical materials

- Good takeoff in 10 ft. fields
- Operating speeds of 60-80 mph
- Minimum speed of 45 mph
- Maximum lift of two-three ft.
- Cessna-type, varnished-steel spring landing gear
- Light controls
- Accurate flying without fatigue
- Adequate control at low speeds
- Good field of vision
- Open cockpit
- Low weight

► Flat craft with minimum of 185 hp., up to 300 hp.

- Flying speed of 20-30 ft. with 70 ft. chord
- For Average Man—William S. Stoat, Phoenix, Ariz., of Scott Research Laboratory, issued the old challenge to the group to build a plane that the average man can afford to buy and operate.

Stoat said that while all modern aircraft are good as far as they go, their possibilities are limited. Only when the plane can do as many things, be as generally useful, and be as easy to use as the car will the average man be able to buy it.

He said the only solution to this economy and simplicity of operation is a plane which flies as well as has the characteristics of a land or animal.

"Sometime, with brains, vision and money should have someone with brains to go after the flapping wing problem on a scientific research basis," Stoat said. "The present attitude of the future will certainly have flapping wings."

Other speakers included Col. Marshall M. Monroe, head of the air division of the National Defense Research Commission Field Board, Fort Monmouth, N.J., and that 5,000 flying fatalities "can't be wrong." He said that the manufacturers building planes for the Air Force may be making a valuable contribution in the Army because both need a small, rugged replace—the Army for one in a rappage of combat troops—a plane that can land and take off from rough strips with certainty and safety.

"I am not sure why the requirements of the flying forces aren't the same as ours." Col. Robert DePietro, the Army should make such planes available to the Army."

ATS Elections

William J. Gibson, vp and a board member of Pittsburgh Institute of Accountants has been elected new president of the Aeromotoric Training Society, and Maxine W. Hallinan, president for

three previous years, has been named vp. Walter Wiedow was re-elected secretary for the sixth term.

Nosed to the board of directors was E. Merritt Anderson, Hugh Capstick, Albert J. Lebewitz, Harry S. White, Maj. G. C. Macleay, Frank Hobart, Oliver L. Parks, Clyde R. Paynter, Beverly E. Howard, Max Whiffen, F. Lang, Kay Hylas, and Gibson and Hallinan.

ATS members operate about 120 aircraft bases in 40 states.

State Tightens Its Crop-Dusting Code

Crop dusters in the state of Washington are going to have to meet more rigid requirements.

The state's crop dusting code has been revised to require each operator and sprayer or charter to have on his payroll at least one pilot with 1,000 hours of solo instruction of least 200 hours in dusting or spraying.

The code, which was re-written by the Washington State Aviation Association with the state agriculture commissioners, exempts flying farmers from meeting these code limits. But if they are chemicals designated as "hazardous and dangerous," they will have to get a written waiver from the commission.

BRIEFING FOR DEALERS AND DISTRIBUTORS

► Aircraft Use Report—The Civil Aeronautics Administration has come out with a comprehensive report on aircraft use in 1948. The agency notes that private flying decreased by seven percent during that year over the 16,344,000 hr. recorded for '47. In those days, individual use of private planes averaged 282 hr. yearly, pleasure flying accounting for 188 hr. per plane.

► Helicopter Explosions—A new federal spokesman, Helicopter Explosions Control Board, Key S. Johnson, is planning to spend more \$150,000 than just buying materials at various Army depots. Craft will be fitted with Geiger counters and other control detecting equipment. Protection will be tested with any passing formation picked up by these instruments.

► Nation Runs Test U.S.—Southern Ryne distributors are being toured by factory specialists, making bee-line on spot inspections of Nations far corners, similar to plan suggested by Birch last year. Continental Motors is co-ordinating a field service trip of its own with the Ryne schedule. About 45-50 percent of plane owners in each area are taking advantage of the inspections.



horizon chasers

Day in, day out, the aviation industry pushes back the horizon . . . develops smaller aircraft with speeds that surpass sound . . . with catalog ranges that make circling the globe just another milk run. And in these modern planes . . . whether they're fighter jets or high-speed commercial liners . . . every fascinating part must take a terrific bearing . . . most widespread the punishment of gravity elevated

temperatures and high rotational speeds. SKF keeps pace with the steady march of aviation progress . . . through constant research and cooperation is able to supply the right ball and roller bearings for the task at hand . . . bearings produced under a system of rigid controls that ensure consistently uniform dependability.

SKF Industries, Inc., Phila. 32, Pa.
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SKF

BALL AND ROLLER BEARINGS

Pioneers of the Deep Groove Ball Bearing—
Spherical Roller Bearing—Self-Aligning Ball Bearing



B-52 intercontinental cruiser, operating in full of 2000 miles "down" bringing gasoline home to sit on one of three mobile plane

Gas station in the sky!

The idea of flying gas station was a popular joke during aviation's early days. Today, it is a reality which Boeing, in co-operation with the U.S. Air Force, has brought to a high state of development with the "flying boom" for refueling bombers in flight.

Proved practical in several test flights, the Boeing boom greatly extends the range of bombers such as the great new Boeing B-52 Superfortress. It makes

possible fast, safe refueling of planes at high altitudes, over the water and out of range of interceptors.

Details are still secret. But the Boeing boom is far advanced over the method used to refuel the Air Force Superfortress "Lucky Lady II" when it flew nonstop around the world last year.

The job of designing and manufacturing a successful refueling device

was tackled with determined racing throughout. Designers, engineers and mechanics worked night and day at a well-coordinated rate, compressing years of painstaking effort into months.

They dedicated to the task the same imagination in design and engineering, the same production skills and expertise that go into all Boeing products "built by Boeing's hand to lead."

The first assembly of aircraft flying today was equipped with integral fuel tanks. The large variety of tanks used in these tanks often several types used in one tank can be generally classified in three categories:

- **Boeing Type-Sack** at present 3H-DC-931, TC-46
- **Nosegate Type-Sack** at TC-HS, EC-775
- **Zinc Chromate-Petty type**, such as RL-2700

Each type accommodates the same amount, tank deviating in the tanks. Some sort of repair method had to be developed. Patching proved to be satisfactory at first, but it was obvious that there was a limit to the number of

patches that could be applied.

The problem, then, was to create a material which would completely replace a sealant and leave the tank so clean that each tank remains sealed until such time as it is required.

• **The method does not leak**—To be used again successfully, as in other methods, it requires to work well.

Worked out satisfactorily, it is a good method. It withstands heat, pressure and vibration, and does not possess undesirable resealing qualities.

• **The Stripper**—Will not support can burns, and at toxicity a reasonable

• **Efficiencies at all types**—Of sealant has been proved to date.

In "flying-boom" action, the tank only with synthetic (thick or very thin) rubber sealants, and eliminate patching entirely. Only one type of stripper need be stored.

In addition to these methods and applications, there comes closer that not only are the main heat requirements for stripping not to 30 percent, but also the total unreducibility of the amount is greatly reduced. As though the "dust limit" for the new material is about the same as for the dissolving type one 60 and down (plus a little local touch up with thick material to remove scratches caused internally).

The present "boil-down" stripper, T-303 (thick) has 30 percent, and 2022 (thin) has 30 and down and is comparable in price to the dissolving type materials. Being perfectly soluble, they may be mixed in obtain my desired consistency, moreover.

NEW AVIATION PRODUCTS



MESIT 3000 tank stripping and cleaning, is made easier with new bond release compound.

Easier Way to Strip Fuel Tanks

New Turco method breaks bond holding sealant to tank, permitting simple peeling of lining from the wall.

A novel and practical approach to the vexing problem of stripping integral fuel tanks has been developed by Turco Products, Inc.

The company has recently put on the market two allied products, Turco 2522 thick and Turco 2522 thin, which strip the sealant from fuel tanks on the bond release rather than by the solvent principle. Already in use by Lockheed Aircraft Corporation, Republic Aviation, and Fairchild Airlines, Turco claims that it reduces man hours by as much as 50 percent.

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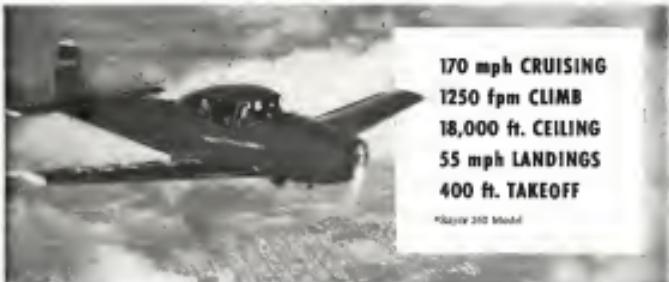
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in obtain my desired consistency, more-

BOEING

Boeing for Boeing for the U.S. Air Force are the new B-52 Intercontinental Bomber, B-52 Intercontinental and G-13 Transport, the C-137 Transport (these planes and the rest of the world's leading airlines, the Pan American Boeing Intercontinental.

ONLY RYAN NAVION® HAS THIS PERFORMANCE COMBINATION



**170 mph CRUISING
1250 fpm CLIMB
18,000 ft. CEILING
55 mph LANDINGS
400 ft. TAKEOFF**

Ryan 200 Model

Plus these equally fine features

✓ ROOMINESS

Roomy place to relax. More than one is space for long distance flying and plenty of luggage. Change seats in flight if you want. Front seats independently adjustable for comfort.

✓ SAFETY

Navion is profile and well-balanced. "Rayson" pilot-error short of fuel-induced stall and spin resistant wing gives added control under stalling speed.

✓ COMFORT

Navion has well-appointed cabin in sound-proofed and well-ventilated. Exclusive roll-back canopy allows for easiest entrance and exit, gives better long-distance flying.

✓ STABILITY

Designed-in directional stability (yaw-damper) gives you the feeling like steering in a car... even in rough air. You arrive relaxed and refreshed after day-long flights.

Ryan Navion

NO OTHER PLANE COMBINES SO MANY FEATURES SO WELL

THERE'S A NAVION FOR EVERYONE—PRICES START AT \$9485.00



RAVION UTILITY 200. A rough "Ho" aircraft in "T-tail" those who travel only, mostly in rugged terrain, at low altitude. Features include No nose payload plus all other design features which have enabled this plane to make safe flying history.



RAVION EXECUTIVE 200. Look at me! Handily handling power, top-shock-mounted seats, spacious cabin, and room for luggage. Features include No nose payload plus all other design features which have enabled this plane to make safe flying history.



RAVION JUPITER 200. With 260 hp Lycoming engine, this Navion can fly faster, higher, and farther. Features include No nose payload plus all other design features which have enabled this plane to make safe flying history.

Rely on Ryan RYAN AERONAUTICAL COMPANY, 466 LINCOLNWOOD PARK, SAN FRANCISCO, CALIFORNIA

AIR TRANSPORT

West European Lines Talk Pool

KLM, Sabena, Swissair plan joint route operations in Europe; if it works, plan may be used over Atlantic.

These of Europe's most successful air carriers are working out a cooperation deal that may very shortly break the competitive picture across the North Atlantic.

At present, KLM Royal Dutch Airlines, Sabena, of Belgium, and Swissair are arranging for pooling of equipment and splitting routes and schedules on internal European services. If the plan works there, it would be logical to extend it to North Atlantic services, instead of their finding being split among both all three lines operate.

The could mean, in effect, a Western European confederate-like trans-Atlantic service resembling that of the Scandinavian countries. Scandinavian Airlines system (SAS) is controlled by the nations of Norway (DNB), Sweden (SAS), and Denmark (DSB). By participation in SAS, these three lines will be able to serve the Atlantic with the much bigger U.S. and British carriers, something they couldn't hope to do individually.

United Front.—The SAS arrangement worked so well over the Atlantic that two years ago the carriers of Norway, Sweden and Denmark extended it to that European system. Now all planes of DNL, DSB and SAS are marked SAS, although each company retains its corporate identity and participates in the profit. The "United Front" against competition is a cheaper birth administratively and operationally.

For some time now, the steadily increasing share of the North Atlantic by British lines, in the first quarter of that year they carried about 55 percent of the traffic, against 29 percent in the same period a year ago. If KLM, Sabena and Swissair was now to pool their passenger and cargo, they could offer an attractive "package" across the ocean, particularly in view of the limited European interline services.

The combine proposal is too new for either trans-Atlantic carriers to know for sure what of its result. But speculation runs that not only U.S. flag lines, but other foreign carriers would feel the effects.

In Union City, New Jersey, KLM would feel short-fused competition whittled down to one-half that one would be in a far better position to match the U.S. carrier's promotional advertising and sales budgets. Then,

the pooled aircraft of KLM, Sabena and Swissair would give the combined enough equipment to handle peak loads. In the past, because they had available equipment, U.S. carriers gave way to British ones, which recently could have gone to foreign lines. Another aspect being considered is that the cost load would be broken on the national scale of three countries, instead of their finding being split among both all three lines operate.

The cooperative plan originated with KLM and Sabena have been under consideration for six months, lately in Zurich, Switzerland. Already, KLM and Sabena reportedly are pooling revenue facilities at airports they each serve. Tentatively, other parts of the arrangement would be:

•Pooling of aircraft of the three lines. Nearly 70 planes would be available and each carrier should have the right to use the planes according to its need.

•Joint scheduling of European flights that now are competitive: Aer Lingus (AL), of Italy, and SAS have

European lines did part of the distance between Europe and America.

•The North Atlantic may not participate in the proposed plan of its competitors. But the initial blow of all was devastating. Switzerland did not dissolve its currency. Brazil was an automatic rise in fares when paid for in Swiss Francs or their equivalent.



CENTRAL RECORDS FIRST MILLION MILES

For being one million miles of scheduled air cargo operations with its fleet of 11 Beech Bonanza, Central Airlines recently was awarded a special certificate by Evelyn A. Fitch, Federal liaison to eight Beech Lines. Central's Webber agent, Frank E. Holzel, Stock co-coordinator, Robert E. Hefling, Jr., Central representative, Allen S.

Mazman, Control agency and telephone sales manager, and Beech chief major engineer Paul E. Allen. In the first eight months of operation, Central has flown 1,665 scheduled flights and carried 3,123 passengers over its 1,520 route-miles without accident. In this time the Beechcraft have handled more than 152,395 lbs of mail and cargo.

the limited number of flights they are permitted.

Asst Sec Headed, president of ATA, said last month, with Golden North, Alaska and Transoceanic Airlines, had asked the CAB to investigate practices of the travel agents and the non-airline air carriers. He also asserted in the help wanted classified advertising column of a Seattle daily newspaper a warning against flying to Alaska "for a job before you leave."

The American and Northwest Airlines, scheduled operators onto the Territory, meanwhile are carrying lots of passengers. Panair carried four plane loads of passengers by May 14, and has charters for some 20 plane loads of passengers.

The story closed on another group of

potential needed maximum when the Macmillan Union signed a contract with the Alaska Airlines Industry, Inc., which promises that union members may not be hired north of Anchorage unless:

The Macmillan's are the first union to obtain such an agreement but other unions dealing with the currency operators may follow suit.

Sierraair Passes Lockheed Tests

Sierraair, the new non-carrying plan to western for west coast windows, has been given wordly of the confidence of Lockheed's help.

As a result of the recent issue of a

Sierraair cabin window on a Model 849 Constellation (Aviation Week May 14), Lockheed has been conducting comparative tests to determine the exact cause of the rupture. The final results, as communicated to the Civil Aeronautics Board, indicate that the failure was an isolated case due to excess pressure.

Since the pressure window (outer) of Model 849 and 749 Constellations are bimetallic, Lockheed recommends that any repair be made immediately with the present Lockheed Acrylic plastic or Sierraair windows.

Pressure windows on Model 849 Constellations are from Avco's Hawker Siddeley panel. Sierraair is considering subcontracting for additional panels and components, provided no casting or stamping of any sort is called for re-

placement. As an additional safety measure for Model 849s, Lockheed suggests that outer panels, which hemispherical supports no stress, be replaced by 4-in. polyurethane (Starmelt) windows. Tests have indicated that the low Sierraair outer panel can safely withstand the added pressure applied should the inner window (outer) fail with values ranging from 6 to 10 psi, the maximum normal cabin pressure is under 7 psi.

Polyurethane outer windows are recommended instead of acrylic due to the former's resistance to cracking.

Lockheed feels that such an outer panel installation should increase safety of Model 849 window configurations a hundredfold.

SHORTLINES

► **Air America**—A CAB enforcement attorney has asked the Board to rescind its charges against the carrier. One of the largest transnational terminals is 1949 and 1949, Air Am Italia was ordered to stop operations. The Board of Inquiry shouldn't be minded for knowing and willful violation of the Civil Aeronautics Act. The carrier stopped operations following the order and in March submitted its letter of application for cancellation. Company's application for an air carrier certificate is still pending.

► **Alaska Airlines**—Report \$1,322,366 net loss at \$4,787,087 operating revenue for the year ended last Oct. 31, compared with \$132,419 profit on \$3,351,538 operating revenue the previous fiscal year.

► **American Overseas**—Company Statemaster set a nonstop record of 11 hr 57 min on the 1,077-mile run from Shannon, Eire, to New York.

► **American**—Handled 7347 passengers on its transcontinental DC-6 aircraft flights between Apr. 9, when service started, and May 18. Total factor was 87.5 percent. R. E. S. Bechtel, AA vice president, said the operation has created new business and regular-scale transcontinental flights have not failed.

► **Delta**—During April carried 94 percent more international cargo than in any previous month. Company assigned U.S.-Borneo Air to serve last week. Through the Institute of International Education, Delta will provide free roundtrip air transportation each year for 25 Latin American students taking graduate work in the U.S. and 25 U.S. students studying in Latin American countries.

► **Delta European Airways**—WPAF orders 25 Vickers Viscounts (200-500 passengers) transports, all operating in easy 40 passenger at 110 mph cruising speed on such continental routes as London-Rome, Paris-Vienna, 200 hr. due to fly this summer. A smaller prototype Viscount has been flying since July, 1948. DSEA carried THS-512 passengers in the year ended March 31—a gain of 30 percent over the previous year.

► **ROAD**—Carried 49,476 revenue passengers in first-quarter 1950, against 14,946 in the same 1949 period. Motor and stage traffic also gained.

► **California Central Airlines**—The Berkeley-based operator has asked CAB for a certificate to carry persons and property (no mail) between San Francisco, Oakland, Los Angeles and San Diego, Calif. starting service in January, 1950. CCA has owned about 100,000 passengers on its extensive Burbank-Oakland-Fresno link and over 3600 between Berkeley and San Diego.

► **Cessna**—Has completed the first and final model of a scheduled feeder airplane with Beech trim. Since first flight in late September, the carrier has handled 383 passengers and 132-133 lbs. of cargo and mail. It seats nearly 20,000 passengers and takes off in its 25-city system in Texas, Oklahoma and Kansas.

► **Frontier**—Officers of the new airline, formed by merger of Challenger Airlines and Missouri Air Lines, are H. S. Dier, president; G. A. Mylne, Donald Duff and R. M. Wilson, vice presidents; and Fred Lewis, secretary. Central office of Frontier will be at St. Paul's Field, Denver, while headquarters of Missouri and Challenger were located

► **Los Angeles Airways-Schlesky**—S-51 helicopter delivered to LAA in August, 1947, has logged over 1800 hr. Two other S-51s have flown over 2500 hr.

► **Pan American**—Has started the first scheduled long-haul service to Guadalupe and Martinique to coincide with opening of new airports on the French West Indian Islands. The new stops are on PAA's Miami-Rio-Tampa-Tegucigalpa route. PAN also has added one weekly backlog to Europe with addition of a second daily flight to London on June 1. Avco Manufacturing Co. Ltd. marketed its 360,934 shares of PAA.

Avco was PAA's largest stockholder, owning 59.7 percent.

► **Philadelphia International Airport**—Contract building \$7,180,000 for a new terminal building have been awarded. Bldg's flagpole structure will be set conditioned. Passengers will be loaded directly from the newest floor of the airport to plane places by gondolas.

► **Robinson**—Carried a record 4682 passengers in April and had a 99.6 percent completion factor. The builder has received a temporary entrepreneurship to serve Union-Kane, N. Y.



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EDITORIAL

The Feeders Should Organize

A feeder airline seminar was held the other day at the University of California. The discussions proved again that the feeder lines have their own difficulties, that their truck line brothers don't have new and never will have.

It appears to us that the problems of the truck lines and the feeders are getting lost almost every day.

Isn't it high time that the feeder airlines of the country band together in a strong association of their own to fight their own battles? They once had a rather weak promotional set-up called the Feeder Airlines Association. This was dissolved before it had a real chance to function because the members one by one joined the Air Transport Association as they won their certificates of convenience and necessity. A Feeder Airlines Committee of the ATA was envisioned when FAA died, but it has never done anything.

We think the leaders should belong to ATA, but they need their own viable organization, too, to defend their own business and go to bat for their cause.

The Corporation and Bad News

The managing editor of Fortune magazine delivered himself of a speech before the Seventh National Conference of Business Public Relations Executives that deserved more publicity in industry than it got.

Ralph D. Paine, Jr., told the public relations bunch (and we hope some aircraft company people were there) that he suspects no yet fully understanding the role of the modern public-owned corporation in society. It is a wholly new institution. It exerts an enormous force. It is not partly for the stockholders, partly for the government, partly for the consumers, partly for labor—part privately for any one group.

"The health and the continuity of the corporation itself has become management's ultimate responsibility. The corporation is run for the corporation." That is Mr. Paine's conclusion.

"Since management today, when thinking of the continuity of the corporation, have literally to think 50 to 100 years ahead," they conclude their ultimate responsibility as a responsibility in the corporation. They see the corporation as an institution in which the interest of many groups must be harmonized for mutual benefit—stockholders, labor, customers, suppliers, the national interest and that most formidable thing called public opinion."

If the modern corporation is as surreal, the function of a critical business press becomes clearer. To the executive who only has to worry about maximizing his profits and minimizing his losses, the critical business press has little interest. With some justification he can say to business paper editors, "My business is none of your business."

But is not the modern corporation as it now evolves that is everybody's business, and the management needs a truly critical press in the same sense that

government needs a truly critical political press, Mr. Paine believes.

Whereas political journalists always find someone who has a special interest in telling the "authenticities" story, business journalists in contrast feel that it appears silly to anybody's interest to talk. "Bad news is exceedingly hard to come by while it is still fresh, particularly competition news," Mr. Paine has noted, along with some of the rest of us.

"Even competition dies up when bad news is the word. One has to deal with a conspiracy of silence, a sort of we-as-sell-the-same-club attitude," Mr. Paine points out. "I find this attitude hard to understand. If business men are all in the same club, then the club is surely suspect, for there are some pretty unattractive, if not dangerous, characters playing poker upstairs."

Paine got in the doghouse originally because of the actions of a few particular muckrakers, not because of the actions of business men in general, the speaker recalls. "Not do good business men, even unscrupulously, speak out against bad business men? No. Why not? I don't know. But if business is going in for club life, ordinary prudence, it seems to me, would dictate at least two clubs—a respectable club and one for the scoundrels."

Mr. Paine emphasizes that the problem is bad news, not just news. The publicists have made it increasingly easy to get good news. Usually, this is referred to as "legitimate" news; "legitimate" news might be defined as good news plus any bad news the low enough you to reveal, he says.

Then Mr. Paine let the publicity men have both barrels:

"It is your problem as well as mine. Because it is greatly to your interest, and thus to the interest of American business economy, to have a press that the people believe. The credibility of the press as it affects business is of the utmost importance. No small part of the popular verisimilitude about business in the 1930's was the result of the like impressions created by so much silly, uncritical, puffery that passed for business journalism in the Twenties."

"The gesture we should strive to repeat upon the public is the picture of the American business economy as it really is, a true picture—like everything in life, partly good, partly bad, on balance much more good than bad, not certainly the best that man has yet devised for solving the age old problem of making a living."

The American temperament being what it is, normally optimistic and energetic, but extremely volatile, it is dangerous to oversell good news, to over-exaggerate the success story, to mistake the spectacular for solid achievement, Mr. Paine warns. Certainly, the business press has been guilty of all these. We agree with Fortune's managing editor that there has been entirely too much press apathy both in business and in the business press. It has exposed the credibility of the press and it has done business more harm than good.

—Robert H. Wood.

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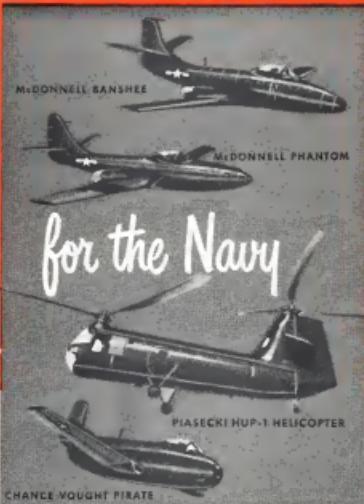


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